For producers of Sand and Gravel, Crushed Stone, Cement, Lime, Gypsum, and other nonmetallic minerals

FEBRUARY 1956

PIT and QUARRY

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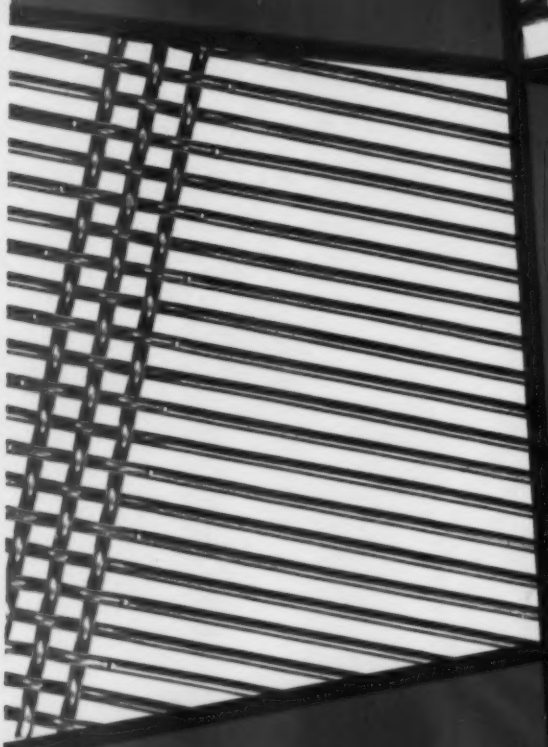

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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

pit and quarry

THE BASIC MAGAZINE · IN A BASIC INDUSTRY

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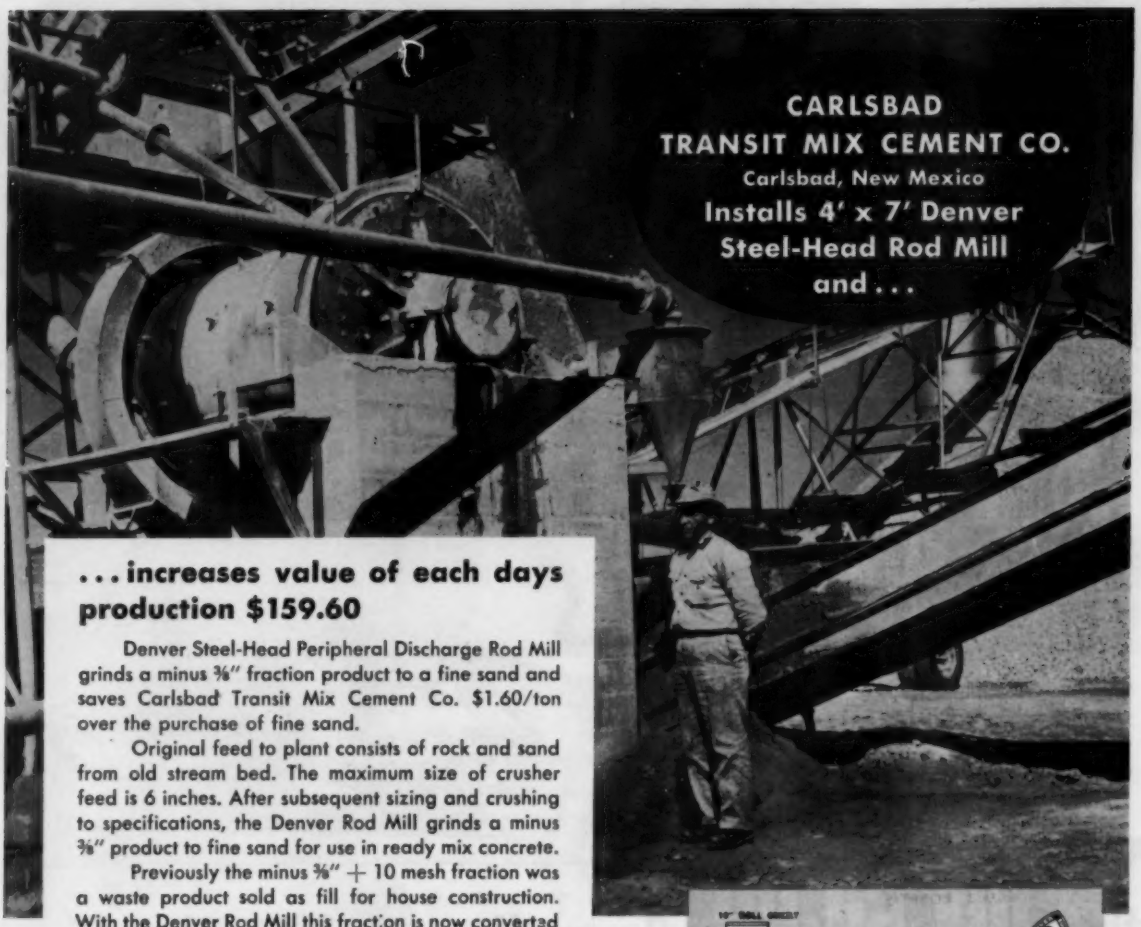

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Denver Steel-Head Peripheral Discharge Rod Mill grinds a minus ⅜" fraction product to a fine sand and saves Carlsbad Transit Mix Cement Co. $1.60/ton over the purchase of fine sand.

Original feed to plant consists of rock and sand from old stream bed. The maximum size of crusher feed is 6 inches. After subsequent sizing and crushing to specifications, the Denver Rod Mill grinds a minus ⅜" product to fine sand for use in ready mix concrete.

Previously the minus ⅜" + 10 mesh fraction was a waste product sold as fill for house construction. With the Denver Rod Mill this fraction is now converted to a useable sand product. The increase in value of this feed to the Denver Rod Mill, taken out as sand, is now estimated at $1.60/ton, or $159.60 per day. Feed to the Denver Rod Mill is approximately 12T/HR. The plant operates at approximately 50T/HR.

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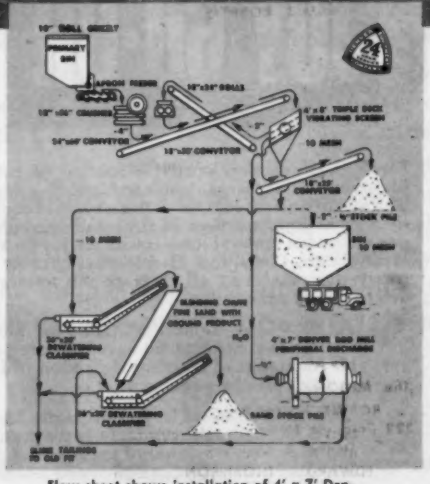
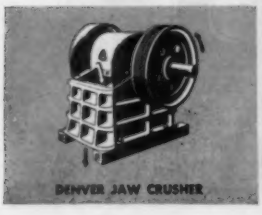


Flow sheet shows installation of 4' x 7' Denver Rod Mill which grinds minus ⅜" fraction to fine sand at a saving of $1.60/T.



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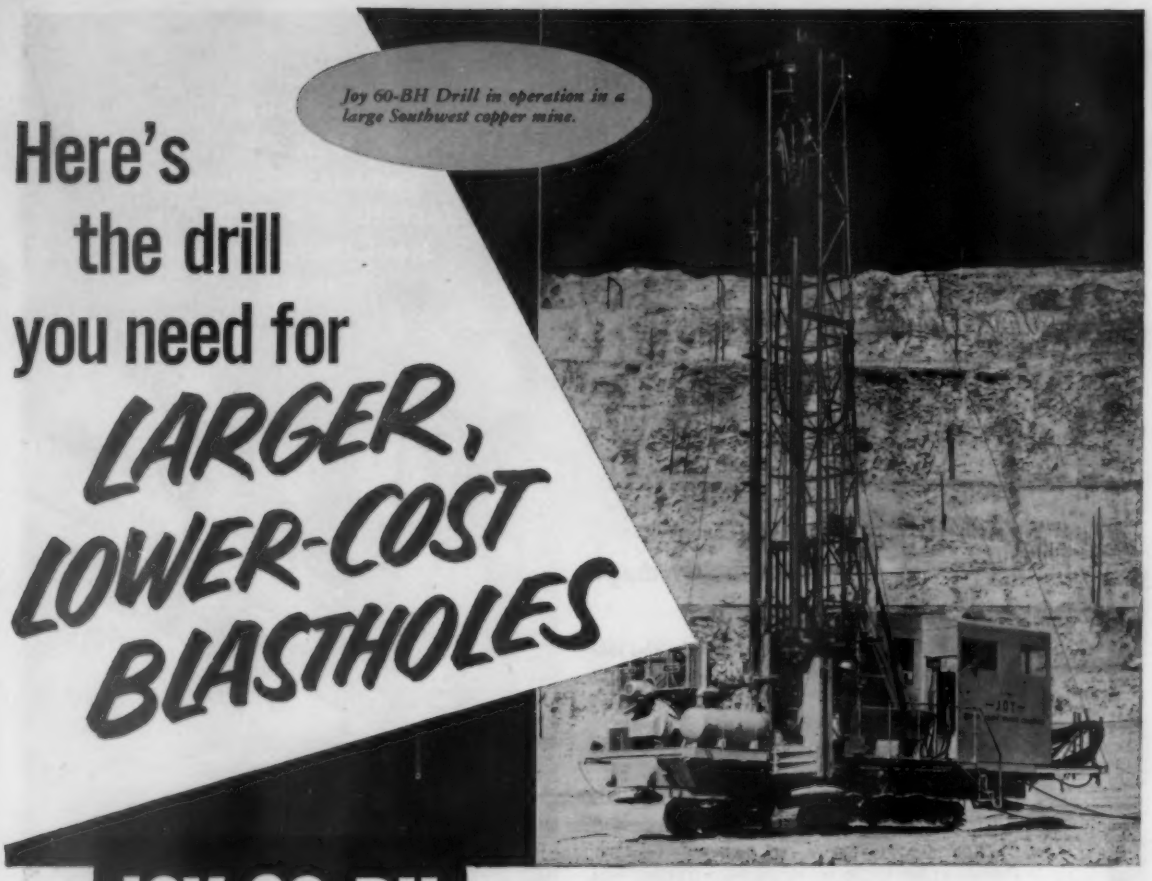

Joy 60-BH Drill in operation in a large Southwest copper mine.

the JOY 60-BH Super Heavyweight Champion

For high-production open pit mining of copper, as illustrated above, large-diameter blastholes are a *must!* The way to drill those large-diameter holes economically—either in copper ore, or in any other open-pit mining or overburden removal job—is with the Joy 60-BH Super Heavyweight Champion. Here's why: because this Joy rotary drill excels in all three of the features which determine bit penetration:

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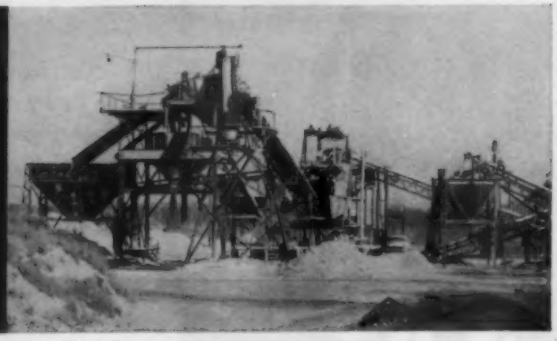
"to keep grizzly materials moving, we had to have three men pushing and shoving,"

reports Mr. Ray Holman, Quarry Superintendent, Quartzite Stone Company, Inc. of Lincoln, Kansas.

"JEFFREY grizzly feeders increased production at each plant 30 tons per hour... a 30% increase"

The Lincoln Plant installed a 5' x 10' long Jeffrey grizzly feeder in September, 1949.



Quartzite Company's Wolf Creek Plant added a similar Jeffrey grizzly feeder in May, 1952.

Grizzly materials are often difficult to keep moving here, especially when they're wet. Even with three men on these bar screens, rock didn't get to the crushers as fast as these plants could handle it.

Addition of Jeffrey electric vibrating feeders eliminated the need for the three men at the grizzlies and permitted later operations to work at capacity. Mr. Holman estimates that each plant was able to boost production by 30 tons—to 125 tons per hour.

Regarding maintenance on this Jeffrey equipment, he says, "Nothing beyond renewing the grizzly bars occasionally."

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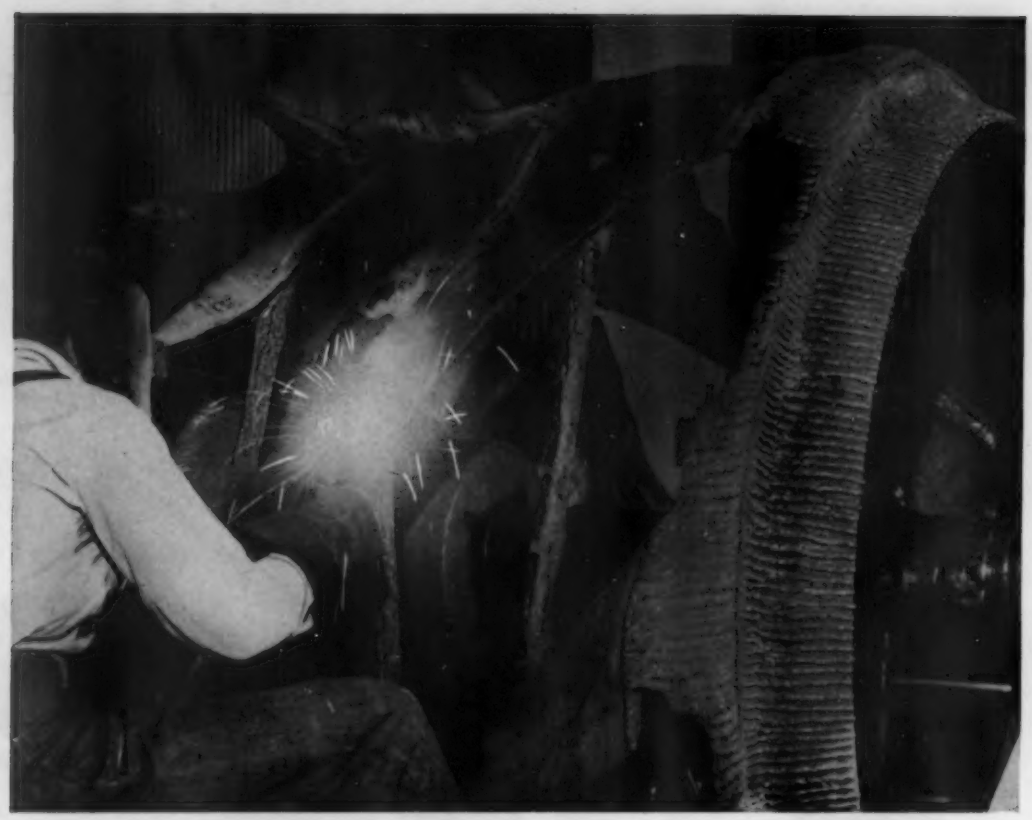

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The Editor's Page

Bring On The Roads!

THE keynote of the recent annual convention of the American Road Builders' Association in Miami Beach was preparedness for the expanded highway program which is sure to be passed by Congress in some form without much more delay. The construction industry left no doubt of its ability to meet any demands which may be made on it. Comparatively little was said, however, about the preparedness of those industries which supply the materials for such construction, including cement and aggregates. We believe it is safe to say that the cement and aggregates industries will be ready.

The preparedness of the cement and aggregates industries for an expanded road program has been a major subject of discussion at recent conventions of these industries and will be again this month. We need not wait to be told, however, that these industries have taken drastic steps to prepare for such demands. Information already at hand, including our own surveys, make this clear.

The cement industry's vast expansion program has been widely publicized in these pages and elsewhere. Ever since World War II this industry had been expending considerable sums for new equipment and a few new plants, but most of this was to replace old and obsolete production facilities which would long since have been junked had conditions permitted. The actual increase in capacity resulting from these expenditures since 1948 was only 15.5 percent, or an average of 2.6 percent annually, through 1954. Government figures show that capacity increased from 254,272,378 bbl. in 1948 to 294,298,000 bbl. at the end of 1954.

WHEN these modest increases failed to alleviate cement shortages and the cement industry became convinced that construction volume would continue upward for at least a few more years it inaugurated an expansion program unprecedented in its history. No official figures are yet available but capacity at the end of 1955 was estimated at about 310,000,000 bbl., a 5 percent increase over a year before.

This was only the beginning, however, as this program is actually just getting well under way. At least ten new plants are being built or are definitely planned for completion in 1956 or early 1957 and there are dozens of major expansions. The capacity of the industry is expected to be increased at least 40,000,000 bbl. by the end of 1956 (13 percent) for a total of about 350,000,000 bbl. Work already announced for 1957 totals over 16,000,000 bbl., and this must be only a small part of what is actually being planned. Feeling seems to be general that there may still be some shortage of cement in 1956 but that by 1957, when the road program will really get well under way, there should be ample capacity to meet all demands.

That the aggregates industries are also preparing for any reasonable increase in demand is evident from the answers to a recent questionnaire sent out for the January Annual Review and Preview issue of PIT AND QUARRY. The sand and gravel industry produced about 475,000,000 tons in 1955, an increase of 7,000,000 tons over the 1954 record total of 468,000,000 tons. A further increase to at least 490,000,000 tons is expected in 1956.

An impressive percentage of the producers, ranging from 14 to 25 percent in various sections, reported that they are planning to expand capacity and 15 percent are planning to build new plants. An even larger percentage said that the adoption of an expanded highway program would cause them to make important capacity increases.

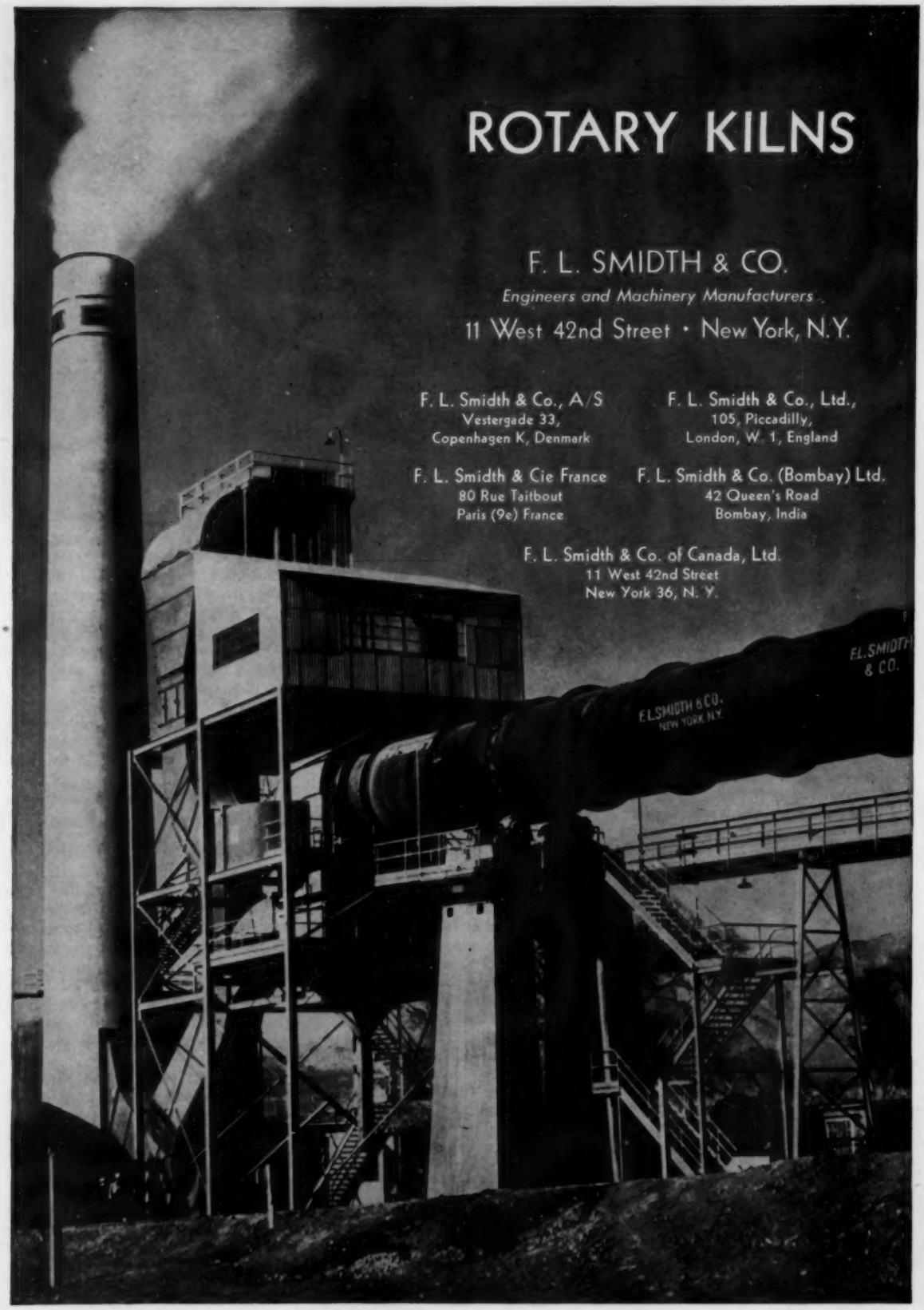
IN THE crushed stone industry the picture was very similar. Production in 1955 was about 316,000,000 tons, a new record and 3,000,000 tons over the 1954 record volume of 313,000,000 tons. A further increase of 14,000,000 tons to about 330,000,000 tons is expected in 1956. About one-third of those reporting already have plans for expanding their capacity and 19 percent have new plants under construction or planned.

The slag industry, of course, can be depended on to again operate at its capacity which is controlled by the volume of steel production. Output in 1950 is estimated to have been about 30,000,000 tons and some increase is expected in 1956.

On the surface it might seem that the aggregates industries are not as alert to the need for expansion of capacity as the cement industry. Certainly information now at hand does not indicate that any comparable expansion program is under way. This is partly due to the fact that these efforts are not as well publicized as those of the cement industry. It must be remembered also that most aggregates plants can be substantially expanded in 2 or 3 months time and that new plants can be built in 3 to 6 months, while cement plant expansions require 6 to 9 months and new cement plants 12 to 15 months from the blueprint stage. Aggregates producers are, therefore, able to wait a little longer before preparing for an expected increase in demand in their marketing areas. Aggregates producers also have a reserve of capacity that cement plants do not have as they usually operate one shift most of the time and two shifts during periods of peak demand. It would not be too difficult for most of them to step up their operations.

THERE seems to be no doubt that the cement and aggregates industries will be ready to meet any possible new construction demands. But opponents of an expanded highway program are already arguing that there will be shortages of nearly everything needed to build roads. The cement industry is doing its job. It is now up to the aggregates industries to accelerate their efforts in this direction and to better publicize these efforts.

Walter E. Trunkey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Washington News Letter

WASHINGTON is marking time. Congress is getting itself organized very slowly. There are no pressing domestic or international issues which demand its immediate attention. The most important factor contributing to the present "watch and wait" attitude is the state of the President's health. Once the announcement is made that his health will or will not permit him to run for re-election, a frenzy of activity is expected to begin.

In the meantime, all efforts are being devoted to keeping things on an even keel. The President's State of the Union message was obviously designed to maintain stability. It avoided stirring up any major issues. In so far as possible, the message postponed debate over controversial issues such as taxes.

The Tax Issue

However, it is becoming increasingly clear that the tax issue will not long be dormant. Both political parties have too much to gain by being "first out" in the race to reduce taxes in 1956. Even the President's preliminary advice to Congress that taxes should not be reduced is not likely to be heeded.

The question still seems to be not whether taxes should be reduced, but rather which taxes shall be reduced, and by how much.

The tax which yields the highest proportion of the Federal Government's revenue is, of course, the personal income tax. There are widely differing schools of thought about what shall be done with this tax. At one extreme, there are those who merely want to raise the personal exemption from the present $600 level to $700. This move would eliminate one group of tax payers. Mostly, it would reduce the tax of the smallest taxpayers by the largest proportion. And that of the largest taxpayer by the smallest proportion. The argument these tax-reformers use has a humanitarian appeal: That if the government can afford to forego some tax income, the savings should go to those least able to pay—that is, the low-income earners.

At the other extreme are those whose policy would accomplish just the opposite result. They would reduce the tax of the smallest taxpayers by the smallest proportion and that of the largest taxpayers by the largest proportion. They use an argument which involves a somewhat different concept of justice, as well as some economics. They say that if the government can forego some tax income, the savings should go to those who are paying the most excessive, virtually confiscatory taxes. They argue further that this is necessary to encourage risk taking on the part of middle- and high-income earners, and that risk taking is the very life blood of our economy.

As in all such matters, the end result is likely to be some kind of compromise. A tax schedule with a somewhat higher minimum exemption plus a small uniform percentage reduction in tax rates is now being discussed.

With respect to corporate taxes, the situation is less hopeful. In 1955 most corporations had their most prosperous year. As a result, they will be able to elicit little sympathy in Congress. The best present estimate seems to be that the corporate income tax rate, scheduled to drop to 47 percent in April, is unlikely to be reduced below 50 percent, if at all.

With respect to excise levels, it appears now that even less may be done. In the general spirit of leaving well enough alone, unless some very special forces develop, little or no changes will be made.

Monetary Policy

For the first time in American history, the Eisenhower Administration has relied heavily on monetary policy to achieve economic stability. This means that it has forced the banking system to contract bank credit when it regarded inflationary forces too strong, and it has offered the banking system encouragement to expand credit when it regarded deflationary forces too strong.

In the latter half of 1954 the Administration did much to reduce bank credit by raising margin requirements on stock and the rediscount rate and by using the Treasury's influence to raise interest rates. It has also exercised its authority to grant mortgage guarantees to influence the volume of home construction.

Recently, the chairman of the Board of Governors of the Federal Reserve System was asked by a Senate committee to explain the relation between monetary policy and the real estate markets. He acknowledged that the government's policy had a very substantial effect on the availability of mortgage money. However, he felt that the cause and effect are less immediate than is generally supposed. The effectiveness of any particular government action would, in his view, depend both on the action taken and upon many other factors, such as the supply of and demand for housing, local conditions, and the attractiveness of loans for other purposes.

The Federal Reserve Board denied that the recent reduction in the level of housing starts was due solely to the more restrictive monetary policy. He pointed to the fact that housing completions were rising throughout 1955. These completions have required such a heavy volume of financing that the amount available for new starts was reduced thereby.

But the real problem which he indicated was the fact that the recent high and rising level of mortgage lending was requiring the mortgage lenders to borrow from the banks to meet their commitments. This meant that the banks were creating new money to make these loans. This is inflationary.

It was at this point, when the demand for funds went beyond the supply of savings and additional funds had to be supplied from an unusually large expansion of bank credit, that the government felt it had to step in.

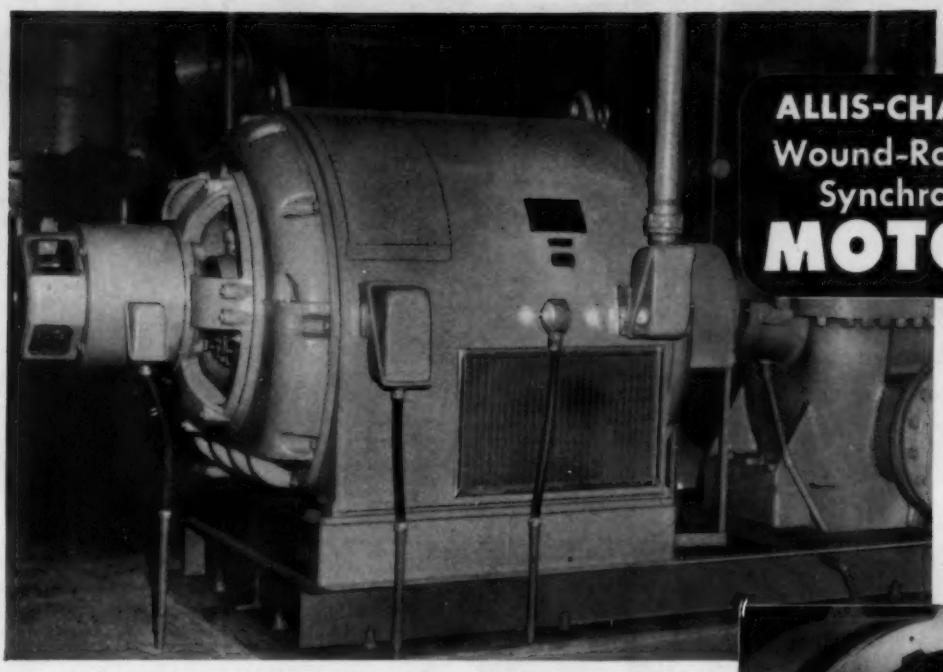
It was implied that if this situation were limited to housing alone, no drastic action might have been necessary. However, at the same time heavy demands were in evidence almost everywhere—to finance business expansion of fixed plant and equipment, to finance public improvements by state and local governments, and to finance the high level of consumer buying of automobiles and other durable goods.

Consumer Installment Credit

It is indicated in another report of the Federal Reserve Board that it was the rapid growth in consumer installment credit which pushed the economy to the brink of inflation in 1955.

It was reported that the "increase of $5,000,000,000 in consumer installment credit over the last year has been an important factor in the economic upswing." The critical im-

(*Continued on page* 105)



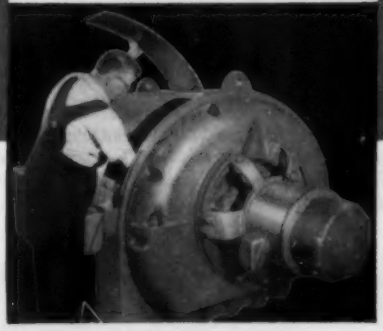
ALLIS-CHALMERS
Wound-Rotor and Synchronous
MOTORS

Shown is a 400-hp, 900-rpm end-shield bearing synchronous motor. Other Allis-Chalmers motors of this design are available from 250 hp at 300 rpm and up, in drip-proof and splash-proof construction.

Now full protection without loss of accessibility

All parts, including slip rings and leads, are enclosed — yet removable inspection covers and end-shield sections simplify maintenance.

Note accessibility offered by generous size opening covers. Upper half of end shield is removable for entrance to motor winding.



These motors combine modern functional design with maximum protection and accessibility.

Here are some of the important features:

- Collectors and brushes are protected by box-type stator yoke from physical damage, dripping moisture, dust and dirt.
- Cast end shields provide rigid bearing support and full protection for motor windings.
- Slip-ring leads are brought out to a terminal box — they are not left exposed.
- Capsule-type sleeve bearings permit inspection or cleaning of motor windings without exposing interior of bearing to dirt.
- Access covers are secured by easy-operating, self-locking fasteners for ready removal.

Get details — Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 05R8183.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

A-4847

How to

CUT CLEARING COSTS

To help you clear land faster and cheaper, here are NEW IDEAS developed by clearing specialist Wade Lahar Construction Co. These "tricks" will help Lahar and their 22 International tractors finish a 23,500-acre job at Buford Dam 7 months ahead of an 18-month schedule.

One pass levels 18-inch trees—Where clearing to ground level is your primary job, Contractor Lahar recommends a big International tractor and V-shaped cutter. The cutter shown was designed and built by Herman Hackler, project manager, at Lahar's home plant in Mountain Home, Arkansas. Four 200 hp International TD-24's, so equipped, are handling most of the Buford Dam reservoir clearing near Atlanta, Georgia. In typical operation, they cut over so much land that 18 other International tractors are

1-to-5 slopes, 1,300 acres per month—Your TD-24 will efficiently clear trees from steep grades as well as from level ground. Here's what Herman Hackler, project manager for Lahar on the $1,611,560 contract, says about this big 200 hp, 8 mph crawler: "TD-24's high-low steering range keeps cutter against the tree until it falls, even on steepest slopes. This factor, plus the "24's" great power, excellent traction, and over-all balance, is letting us crawler-cut 99% of our Buford Dam job, despite slopes averaging 1-to-5, and, in some places, 1-to-4. Our fleet of *22 International tractors*—11 TD-24's (four of them with cutters), six TD-18's, three TD-14's, and two TD-9's—clears and rakes 1,300 acres per month. This production, in our opinion, could not be exceeded by any other make of tractor!"

Burn, turn with one tractor—On big jobs, Mr. Lahar suggests use of one medium-sized tractor to handle burning of brush piles. This leaves bigger machines free for production work. Note how clear the raked ground is behind tractor. When Lahar's job is done, some 14,000 acres will be completely cleared; about 9,400 acres partly cleared, with some trees left standing in the water to benefit future water life.

Team decking boosts output—Where terrain permits, three to six of Lahar's 22 IH crawlers team to rake and pile the cut brush and trees. This gives two advantages . . . (1) rakes, by catching both ends of fallen trees and brush, pick up material lying between tractors which normally would require separate pass . . . (2) one pass per team is all that's needed to provide a clean swath.

kept busy decking and burning. One pass of their 13-ft long, 14-ft wide blade slices saw-like through brush, pine, and mixed hardwoods up to 18 inches in diameter. For scattered trees up to 12 inches in diameter, a similar though smaller cutter is used on a 66 dhp International TD-14A. Both TD-24 and TD-14 have a canopy of 2 and 2½-inch pipe. This protects operator and machine. Entire canopy and cutter assembly pins to regular A-frame . . . can be quickly detached and interchanged with standard or other special blades.

Blade "saws" larger trees—If your clearing work involves trees larger than 18 inches, here's another idea from Wade Lahar Construction Co. Using same mild-steel cutter blade as on smaller trees, have TD-24 operator "see-saw" back and forth a few times to cut the trunk. Just a few seconds' work with the 64,000-lb TD-24 will topple the tree.

Careful in-the-field maintenance boosts output, too. Left, mechanic uses compressed air to blow dirt and leaves from TD-24 radiator core. Right, special steel tooth, 2½ ft long with 18-inch overhang, is welded to TD-24 blade. Four teeth and top blade extension are used per raking tractor.

Winches logs from swamp—Clearing from marshy areas may present you with quite a problem too. Wade Lahar Construction Co does this work, 1% of their 23,500-acre Corps of Engineer job, with chain saw crews and winch-equipped TD-9 and TD-18 crawlers. After winching in, tractors skid timber to central area.

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makes every load a pay load

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Industrial Power

INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

A machine size for every job . . . see your nearest INTERNATIONAL INDUSTRIAL POWER DISTRIBUTOR for details.

PAYSCRAPERS 13 yds. and 16½ yds.

CRAWLER TRACTORS 8 Models . . 48 to 200 hp

DIESEL, GAS ENGINES 18 Models. 16½ to 200 hp

WHEEL TRACTORS 5 Models . . . 9 to 30 dbp

ALSO: International Draft Loaders . . . International Scrapers, Bottom-Dump Wagons . . . International Superior Pipe-Boom Tractors . . . and International Trucks.

Cut Downtime Losses by Having Tires Repaired or Retreaded While Your Equipment Is Idle

SECTION REPAIRS — Can be handled on any tire with Firestone's repair facilities.

FIRESTONE RETREADS — A special cut-resistant tread rubber compound is added. Scientifically controlled pressure is applied to eliminate air pockets and to give maximum adhesion.

GET GOOD, FAST SERVICE AT Firestone

YOU'RE time and money ahead when you let Firestone handle your repair and retreading needs.

You cut your tire maintenance costs because Firestone is equipped to do the job better, quicker and at lower cost.

You save with Firestone Traction Cap retreads or Firestone Full Cap retreads because they stand up longer and keep your downtime at a minimum. Firestone Retreads have the proved Firestone new tire tread design for greater traction, greater driver control, more hours of service.

Call your Firestone Dealer or Store for faster service on all your repair and retreading needs.

TRACTION CAPS OR FULL CAPS AVAILABLE FOR THE FOLLOWING TIRE SIZES

8.25-20	18.00-24
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11.00-20	21.00-25
12.00-24	24.00-25
13.00-24	24.00-29
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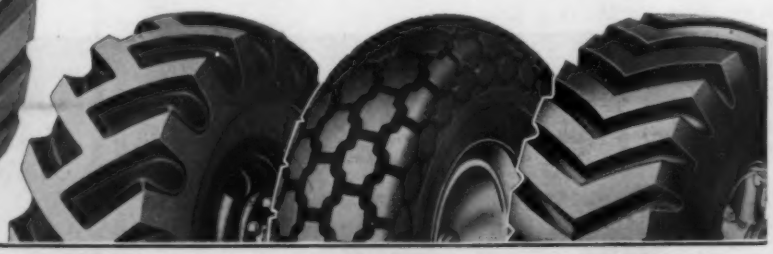

GROUND GRIP FULL CAP | **ALL NON-SKID FULL CAP** | **ROCK GRIP FULL CAP**

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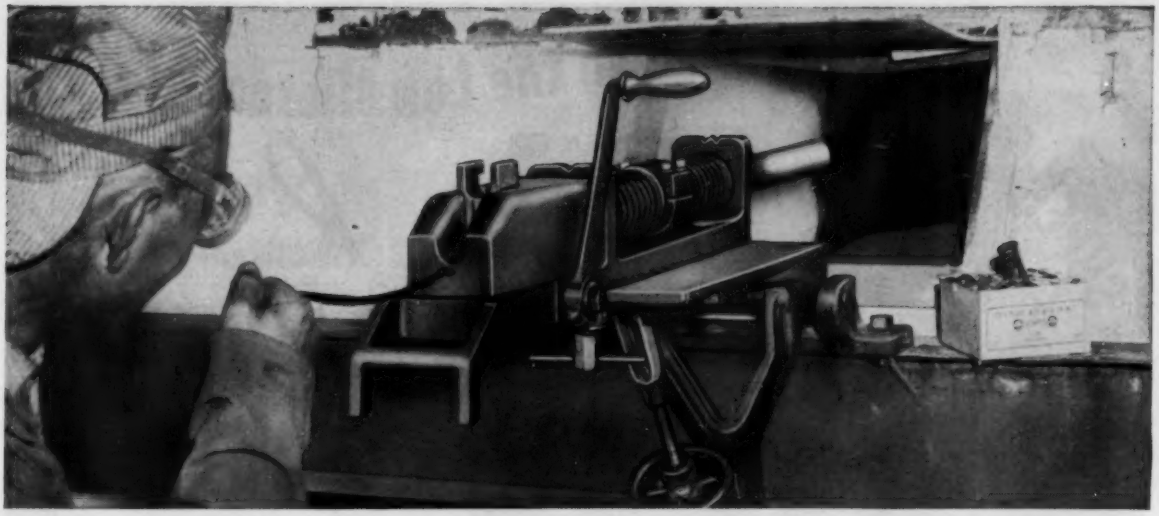


Time cut 112 to 1 in removing kiln rings with the REMINGTON INDUSTRIAL GUN

VARIOUS MOUNTINGS ARE POSSIBLE with the Industrial Gun. Here's one of the most common: secure a 6" or 8" "I" beam across the face of the kiln and simply hook the mount into the bolster. The gun can also be mounted on a truck, a tripod, or a mobile chassis for shooting down obstructions in mines or quarries.

26 hours per month production time gained by refractory plant

"We save 222 man-hours per month—and gain 26 hours' production time!" That's how the superintendent of a large refractory plant in Georgia sums up the reasons he's sold on the Remington Industrial Gun. Formerly, removal of kiln rings took 8 men an average of 28 hours per month. Two men now do the same job *in one hour*.

Hundreds of plants have found the industrial gun to be the fastest, most efficient method for ring removal. In seconds, one man can aim, load and fire the gun. A few shots loosen the ring . . . cause it to crumble when the kiln is rotated. There's never any need to cool and reheat the kiln. *Downtime is cut to a minimum!*

Use of the Remington Industrial Gun can mean big savings in labor, big gains in production for you. Our technicians will be glad to work with you on ring-removal problems at your plant. Just send the coupon for a free illustrated folder with complete information.

"If It's Remington—It's Right!"

Remington DUPONT

REMINGTON INDUSTRIAL SHELLS have tremendous smashing power. They're loaded with a powerful 3-ounce lead projectile that develops 7,475 foot-pounds' muzzle energy.

CUTTING A "KEY-WAY." A few well-placed shots loosen a section of clinker. The ring is weakened by this loss of the arch key . . . will usually fall without additional shots when the kiln is rotated.

Industrial Sales Division PQ-2
Remington Arms Company, Inc.
939 Barnum Ave., Bridgeport 2, Conn.

Please send me your free folder describing the Remington Industrial Gun.

*Name*_____ *Position*_____

*Firm*_____

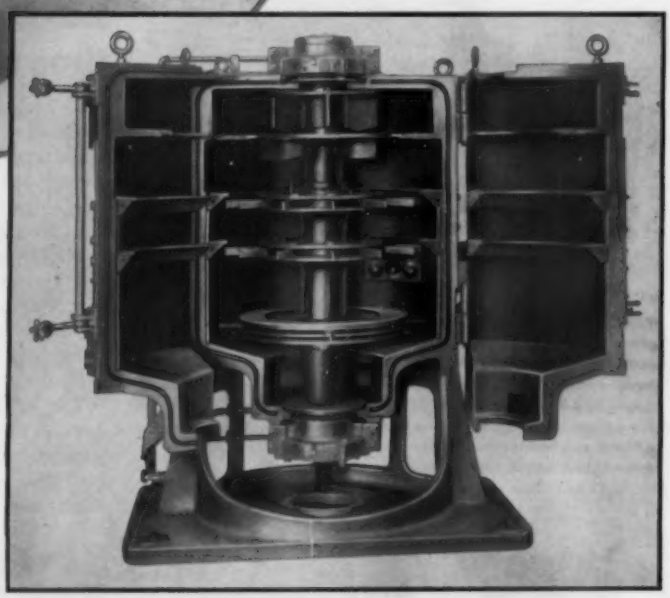
*Address*_____

*City*_____ *State*_____

SUPERFINE PULVERIZING in the Low Micron Sizes!

Raymond VERTICAL MILL

RAYMOND
SINCE 1887



HERE is a practical straight-forward pulverizing unit that has proved its leadership in the high-fineness grinding field for the production of uniform quality powdered materials in sub-sieve particle sizes, testing 90% to 95% finer than 10 to 15 microns in the finished product.

The Vertical Mill is an outstanding Raymond design in ease of operation, simplicity of control and wide-open accessibility to all working parts for inspection, cleaning, adjustment, maintenance. The mill has no close clearances or complicated gimmicks—a precision machine of simple construction.

The operation is clean, dustless and automatic. The mill gives excellent results in producing superfine grades of clays, talc, graphite, cobalt oxide, earth colors, vermiculite, chemicals and soft non-metallics.

Write for Raymond Bulletin #70

Hinged Doors open wide for Complete Accessibility
Easy to clean out when changing to different materials. Simple to make adjustments for controlling particle size. Whizzer air separation maintains close uniformity and provides wide range fineness regulation.

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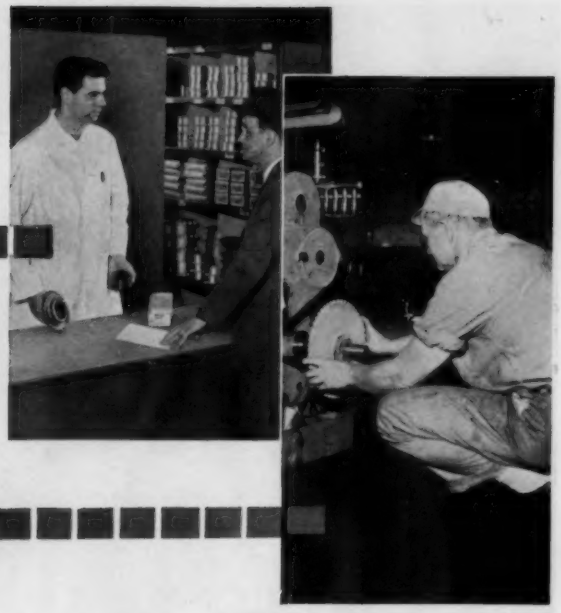
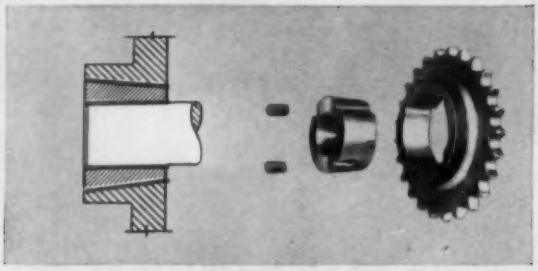
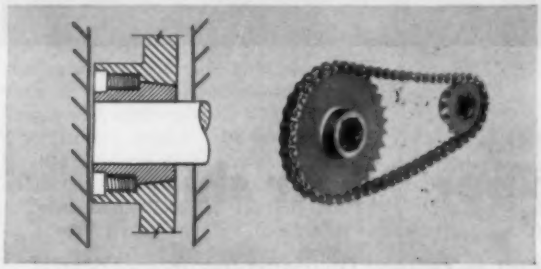
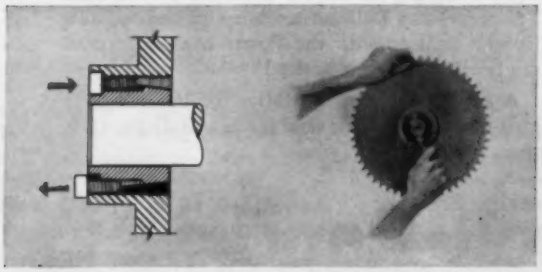




FULL BEARING . . . POSITIVE GRIP. Contact extends the entire length between bushing and shaft, sprocket and bushing. Uniform compression on shaft provided by tapered construction.



SAFE AND COMPACT. Flush mounting requires minimum shaft space and bushing requires no more length than sprocket hub. No projecting flanges or bolts—all cap screws are fully recessed.



EASY TO INSTALL AND REMOVE. Setscrews force and hold bushing in tapered bore of sprocket, clamp it tightly onto shaft. Turning setscrew in removal hole quickly releases bushing.

LINK-BELT roller chain taper lock sprockets require no reboring or other machining

HERE'S the simplest, most economical method of installing roller chain sprockets. Link-Belt roller chain taper lock sprockets are available for immediate delivery in every industrial area, in sizes from ½ to 2-in. pitch. Bushings are stocked in bore increments of 1/16 in. for shaft sizes from ½ to 4-in. diameters. No delay for sprockets to be rebored.

Teeth are precision cut in conformance with ASA standards, accurately spaced for smooth chain action. Uniform, true tooth surfaces provide full contact with chain rollers, assuring maximum operating life.

Your source is the Link-Belt factory branch store or authorized stock-carrying distributor. Be sure to ask for new Book 2649 listing all available stock sizes.

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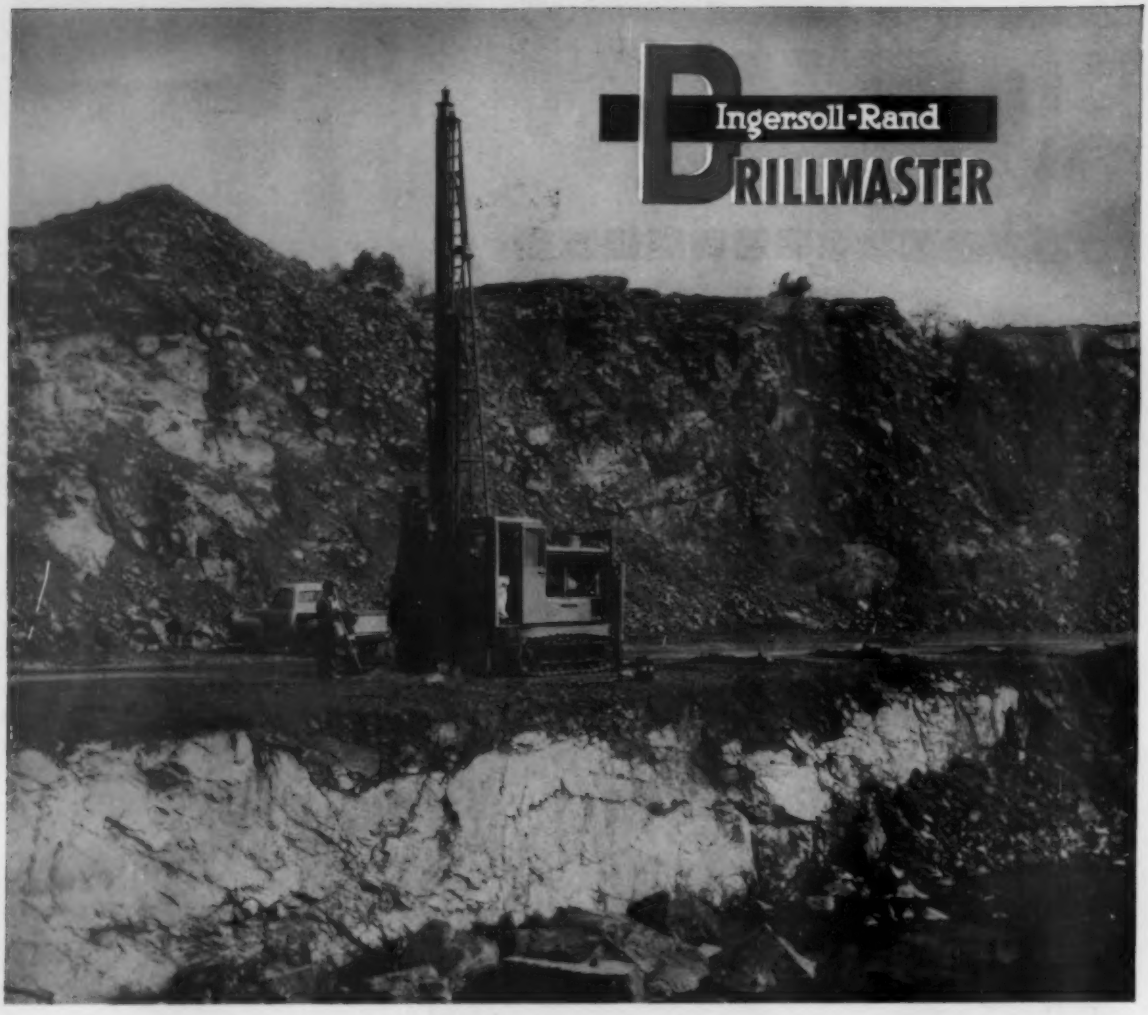
13,947

ROLLER CHAIN AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.



increases drilling speed

from 30 feet to 200 ft per 9½ hr shift

Here at a large eastern limestone quarry, the Ingersoll-Rand Drillmaster shown above is sinking 6″ blast holes to a depth of 42 feet, at a rate of 200 ft. per 9½-hour shift. Previously, with other drilling equipment, footage averaged only 30 ft. per shift. The Drillmaster Carset Jackbits are giving 5,000 to 10,000 feet per bit, with 500 feet between sharpenings.

The unique "down the hole" Depth-Master drill, an exclusive Drillmaster feature, goes right down the hole with the bit—avoids power losses in long drill steels and applies the full drilling impact directly to the bit at any depth of hole. The three-way Drillmaster can also be used as a Rotary drill or with the Power-Master "out of the hole" drill when desired.

Ask your I-R representative for the complete Drillmaster story—or send for new Bulletin 4179.

Ingersoll-Rand
11 Broadway, New York 4, N.Y.

5-325

ROCK DRILLS • COMPRESSORS • AIR TOOLS • TURBO BLOWERS • CONDENSERS • PUMPS • OIL & GAS ENGINES

News of the Industry

St. Lawrence Cement Co. Doubles Planned Capacity Of New $27,000,000 Plant

The St. Lawrence Cement Co., already operating a plant in Quebec, will double the capacity of its new plant under construction at Clarkson, 20 miles from Toronto. This will bring the total output of the company, headed by Dr. Bernhard Ulrich, general manager, to 4,500,000 bbl. (Canadian).

The ultimate plant layout in Clarkson is made for three kilns, two of which have been built. The cost is estimated at $27,000,000; and yearly capacity will be 12,000,000 bags. Start of operation is scheduled for January 1, 1957. The output from this plant will end the cement shortage in eastern Canada. Railroad facilities and a dock on Lake Ontario will extend the natural distribution area of the company beyond Canada.

Erection of equipment, mainly supplied by Canadian manufacturers, will start early this spring.

Four 8- by 37-ft. raw mills and five 10- by 28-ft. cement mills are used for grinding. For dust recovery systems alone, including two six-compartment electric precipitators with 99 percent efficiency, the company will spend well over $1,000,000. The packing station will be able to serve customers at the rate of over 5,000 bags per hour.

Prestressed concrete will be used on a very large scale for the buildings, replacing hard-to-get structural steel. The 30 prestressed concrete beams of the 900-ft. storage hall will have a span of 130 ft. For the construction of the plant a total of 65,000 cu. yd. of concrete will be needed.

A total of 600,000 cu. yd. of earth was excavated for site levelling, and the material was used for backfill in the causeway and the dock, which will accommodate large seagoing vessels.

New Quarry to Be Developed By Blue Ridge Stone Corp.

A limestone quarry with an anticipated production of 1,500 tons daily will be developed by the Blue Ridge Stone Corporation on U.S. Route 501 between Lynchburg and Rustburg, Va.

Dr. Bernhard Ulrich, general manager, St. Lawrence Cement Co.

Company officials and the Lynchburg Chamber of Commerce report that stripping operations on an 87-acre tract are under way. Indications are that the limestone supply will last at least 25 years.

Coming Events

February 13-16, 1956—Chicago. 40th annual convention, National Sand and Gravel Association, 26th annual convention, National Ready Mixed Concrete Association, and combined exhibit. Headquarters, Conrad Hilton Hotel; exhibit, Coliseum.

February 15-17, 1956—Chicago. Annual convention, National Agricultural Limestone Institute, Inc. Blackstone Hotel.

February 20-22, 1956—Chicago. 39th annual convention and biennial exhibit, National Crushed Stone Association. Conrad Hilton Hotel.

February 27-March 2, 1956 — Buffalo. Committee week, American Society of Testing Materials. Hotel Statler.

U.S. Gypsum Announces Multimillion-Dollar Plan to Expand Philadelphia Plant

United States Gypsum Company officials have announced authorization of a major expansion of facilities at the firm's Philadelphia plant.

Included in the project are a new finished goods warehouse, additional storage and packing facilities in the plaster plant, improved truck-loading accommodations, and added storage for raw materials in the board plant.

Company spokesmen stated that the proposed work will increase production at the Philadelphia plant, allow for greater inventories to meet peak demands, and provide better service for customers.

The Philadelphia plant produces gypsum lath and sheathing, gypsum wallboard, gypsum tile, and a full line of plaster commodities.

Nazareth Cement Company Announces Changes in Staff

Changes in vice-presidencies and several other promotions made recently, have been announced by the Nazareth Cement Co. Retirement of a vice-president was also noted.

Ernest E. Wilken has been named vice-president in charge of production. Mr. Wilken replaces Harry A. Reichenbach, who retired from that post. However, Mr. Reichenbach remains with Nazareth Cement as an engineering consultant and advisor.

Also named as a vice-president was Edmund C. Morgan, who takes over the post of chief chemist.

Those receiving managerial promotions were Herbert J. Scott, general superintendent and chief engineer Wesley A. Garr, assistant general superintendent and head of labor relations; and Clifford Beck, general foreman and assistant to the general superintendent.

The annual joint convention of the Texas Aggregates Association and the Texas Ready Mixed Concrete Association will be held on April 13 and 14 at the Statler Hilton Hotel in Dallas.

December Building Totals Set New High Records—1955 Score Highest Ever

Contract awards for future construction listed in the Dodge Reports in December and for the whole of 1955 set several new high dollar records, F. W. Dodge Corporation has announced. The reports cover the 37 states east of the Rockies.

The year's total of $23,745,277,000 was an all-time high—20 percent higher than the 1954 total, which had broken all previous records.

Last year was the 10th successive year of new record volumes. It set new records in all three of F. W. Dodge's basic classifications: nonresidential, residential, and heavy engineering. The residential classification hurdled the $10,000,000,000 mark for the first time in Dodge history.

December set the top mark for any December, at $1,920,754,000; up 5 percent from December, 1954. Both the non-residential and heavy engineering classifications set new December records. Residential contracts in dollars were the second-largest for any December yet recorded.

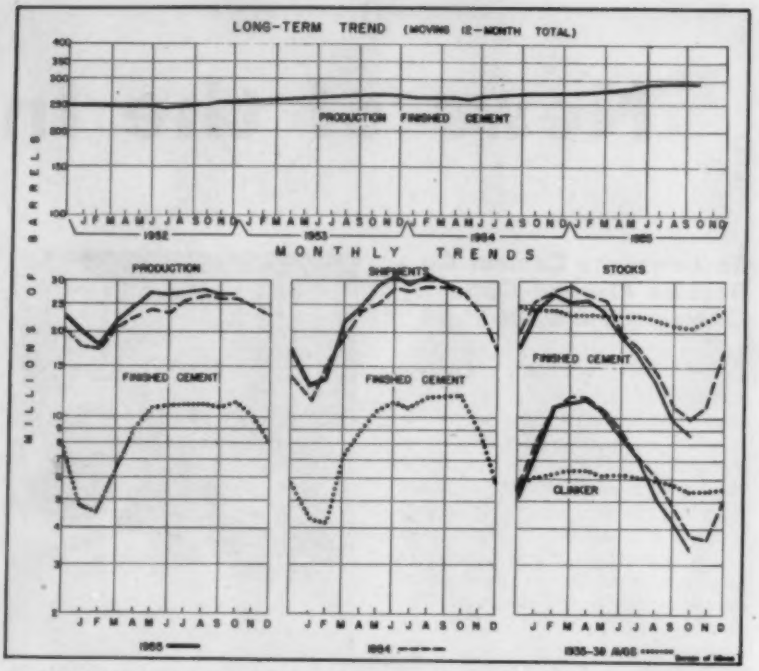
"Striking features of the year 1955 were as follows," said Thomas S. Holden, Dodge's vice-chairman:

"In two months last spring residential contract figures went above the $1,000,000,000-mark for the first time. In three other months early last year the contracts were quite close to the billion-mark. A moderate leveling off in housing contracts and starts during the latter part of the year came about largely as a result of tightened credit.

"The sheer extent of the 20 percent gain in the total Dodge figure over 1954 is worthy of note. The gain of 1954 over 1953 was only 13 percent. Furthermore, it is also noteworthy that all three of our major classifications — residential, non-residential, and heavy engineering—showed nearly equal percentage gains over 1954, each gaining almost exactly one-fifth. . ."

For the year, non-residential reached $8,496,829,000, up 19 percent over 1954; residential amounted to $10,185,259,000, up 20 percent; heavy engineering totaled $5,063,189,000, up 22 percent.

For December, the non-residential total was $726,825,000, up 4 percent from December, 1954; residential was $711,206,000, down 7 percent; but heavy engineering was $482,723,000, up 32 percent.



SUMMARY—Production of finished portland cement in October, 1955, as reported to the U.S. Bureau of Mines, totaled 27,924,000 barrels—an increase of 8 percent over October, 1954. Mill shipments in October, 1955, totaled 28,641,000 barrels, an increase of 6 percent more than in October, 1954—while stocks of 8,753,000 barrels of finished portland cement on hand October 31, 1955, were 9 percent less than on the same date last year. Clinker production during the month totaled 26,818,000 barrels, a 7 percent increase over 1954.

PRODUCTION—One hundred and fifty-seven (157) plants in 37 states and Puerto Rico reported a production of 27,924,000 barrels of finished portland cement during October, 1955, as compared to 25,887,000 barrels during the same month in 1954.

Clinker production during the month of October, 1955, was 26,818,000 barrels compared to 25,031,000 barrels during October, 1954.

Clinker figures for 1955 are not strictly comparable with those of 1954 and earlier years because producers are now asked to report clinker in terms of the number of 376-lb. barrels of finished portland cement that could be produced from the quantity of clinker in question, whereas previously the unit of measure was the 376-lb. barrel of clinker.

Separate data on high-early-strength (Type III) by districts and prepared masonry cements appear in this year's reports. Production of high-early-strength portland cement in October, 1955, totaled 868,000 barrels, an increase of 7 per cent as compared to the October, 1954, production. The production of prepared masonry cement was 1,282,000 barrels (376 lb.).

SHIPMENTS—Mill shipments of finished portland cement were 6 percent higher in October, 1955, than in October, 1954, and totaled 28,641,000 barrels. This figure and the district totals that comprise it are not strictly comparable with mill shipments of previous years because they do not include, as in the past, the number of barrels of finished portland cement used in the manufacture of prepared masonry cement.

Shipments in October, 1955, were higher in 13 districts and lower in 7. The greatest increases were registered in the Colorado-Arizona-Wyoming-Montana-Utah-Idaho-Texas, and Oregon-Washington districts. The greatest decrease was in the southern California district.

Mill shipments of high-early-strength portland cement in October, 1955, totaled 971,000 barrels. Nearly half of these shipments were from mills in the eastern Pennsylvania-Maryland, and Michigan districts. No shipments were made from mills in the Puerto Rico district.

Mill shipments of prepared masonry cements in October, 1955, totaled 1,392,000 barrels. Nearly half of these shipments were from mills in four districts—eastern Pennsylvania-Maryland, Michigan, Indiana-Kentucky-Wisconsin, and Virginia-Georgia-Florida-Louisiana-South-Carolina-Mississippi. Prepared masonry cement data are shown in equivalent barrels of 376 lb. each to maintain uniformity with the portland cement data.

STOCKS—Mill stocks of 8,753,000 barrels of finished portland cement were on hand October 31, 1955—9 percent less than the 9,667,000 barrels on hand October 31, 1954. Stocks of clinker on hand at the end of October, 1955, were 3,349,000 barrels, a decrease of 13 percent less than on hand October, 1954. Stocks of clinker on hand at the end of October, 1955, were 3,349,000 barrels, a decrease of 13 percent less than on hand October, 1954.

Power Gypsum & Mfg. Corp. Building Plant in Wyoming

The Power Gypsum and Mfg. Corporation has begun building a plant at Lander, Wyo., and hopes to be in production in the near future. It will produce gypsum for soil additions. Walter Bose, one of the owners, estimates that gypsum beds south of Lander contain at least 1,000,000 tons of gypsum. Mine installations will include a 30-hp. crusher, a 125-hp. hammermill, a conveyor, and several storage sheds.

"The EAGLE sand screw with coal removing attachment has been working satisfactorily for the past 2 years"

A large sand and gravel company, operating a number of plants in Illinois, encountered difficulties from coal in their deposit at one of their plants.

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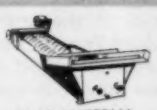
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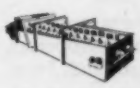
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Canada Cement Company Adds Kiln and Four Mills At Ft. Whyte, Man., Plant

Continuing an expansion program which was inaugurated in 1954, Canada Cement Company, Ltd., is currently spending an additional $3,000,000 for a second kiln and four grinding mills to be installed at its Fort Whyte, Manitoba, plant.

Construction of these mills and kiln began this winter, and completion is expected in the fall. When completed, Canada Cement will have a capacity of 4,500,000 bbl. annually, three times the capacity prior to 1954. Expansion costs since 1954 total $15,000,000.

The second kiln (450 ft. long and 12 ft. in diameter) will be set beside the original kiln. The same building will house both the kilns. The new kiln is designed for heating with natural gas. Oil is to be used only in the winter months, when gas is under peak load conditions.

To compensate for the increased production of two kilns, two grinding mills, a sand mill, and a ball mill are being erected.

Major Promotions Announced For 5 in Penn-Dixie Plants

M. L. Silcox, general operating manager of the Penn-Dixie Cement Corporation, Nazareth, Pa., has announced the appointments of five men to various executive positions.

Richard P. Scott, a 15-year veteran of the cement industry, who joined Penn-Dixie in February, 1953, was named chief engineer. Mr. Scott was previously operating engineer at the Nazareth plant. Before that he had been associated with the Medusa Portland Cement Company.

John H. Jones has been appointed to succeed Mr. Scott as operating engineer. Mr. Jones had been superintendent of Plant No. 4 at Nazareth since November, 1954, when he was promoted from Penn-Dixie's plant in Clinchfield, Ga. Prior to that time he had served in the corporation's plants as a student engineer, engineer-draftsman, and plant engineer.

Michael B. Hoffner will succeed Mr. Jones as superintendent of Plant No. 4. Mr. Hoffner is a graduate of the civil engineering school of Michigan State University. Before joining Penn-Dixie in 1952 as an engineer-draftsman Mr. Hoffner was with Medusa for a year.

Omar J. Glantz has been named superintendent of Penn-Dixie's Plant No. 10 in Petoskey, Mich., where he replaces Fred B. Tripp, who resigned. Mr. Glantz joined Penn-Dixie in 1954 as plant manager of the Clinchfield operation. He was later promoted to superintendent. Prior to joining the corporation, Mr. Glantz was with the U. S. Bureau of Reclamation as head of the cement unit.

The final appointment went to Billy B. Nall, who replaces Mr. Glantz at Plant No. 2 in Clinchfield as superintendent, Mr. Nall formerly served Penn-Dixie as a plant engineer at the No. 1 plant in Kingsport, Tenn., and was in charge of developing the Penn-Dixie quarry operation at Speers Ferry, Va. Mr. Nall joined the corporation in 1949.

Equipment of Ontario Plant Destroyed in $100,000 Blaze

More than $100,000 worth of gravel and sand processing machinery was destroyed by fire in Stouffville, Ont., at the pit of the Western Sand and Gravel Company because the local fire department's pumps were frozen.

The fire, which broke out in the machinery repair shop, destroyed a crusher, three gravel trucks, a conveyor, motors, welders, and bins. John Byers, Grant Barkey, and Fred Mason, owners of the company, stated that the pit will be out of business until a portable crusher can be installed.

Halliburton Sells Property To Verde Valley Industries For Unique Project

Erle P. Halliburton, industrialist of Tulsa, Okla., and Phoenix, Ariz., recently sold a 1,200-acre tract near Clarksdale, Ariz., to Verde Valley Industries, Inc., Phoenix, for a cement plant site. Included in the sale is a copper smelting plant acquired by Mr. Halliburton from the Allison Steel Manufacturing Co.

Present plans call for crushing the limestone at the reconverted copper plant near Clarksdale, blending it with water, and transporting it *via* pipeline 120 miles to Phoenix to be made into cement. It is said that the 5-in. pipeline would be the longest of its type in the nation. Limestone conveyed to the plant at Phoenix would permit production of 1,200 bbl. of cement per day.

New Equipment, Rotary Kiln Expanding Warner Co. Market

John Curtin Jr., president of the Warner Company of Philadelphia, addressing those attending the firm's Quarter Century Club dinner, mentioned several signs of progress.

In order to offer better service to customers, Warner is putting 62 new truck mixers to work and replacing over-age wooden vessels with five new river barges. To broaden its central-mix market, the company is erecting a central-mix plant near Delaware City, Del., where sales of sand, gravel, concrete, and Super-Limoid are expected to boom in the near future. At Bellefonte, Pa., preparations are being made for the building of a large rotary kiln, to increase lime burning capacity.

• Correction

The program of the N.A.L.I. convention was erroneously given on page 30 of our January issue as that of the 39th convention. Actually, it was the 39th Natl. Crushed Stone Assn. convention.

Billy B. Nall

O. J. Glantz

John H. Jones

M. B. Hoffner

R. P. Scott

ACID TEST!

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Kenneth Lindsay

Construction Industry Mfrs. Re-elect Lindsay President

The Construction Industry Manufacturers Association in its annual session at Miami Beach, Fla., unanimously re-elected Kenneth Lindsay of the Iowa Manufacturing Company, Cedar Rapids, Iowa, as president for the coming year. C.I.M.A. held its annual meeting in conjunction with that of the American Road Builders' Association. The most important item for discussion was the country's need for an intelligent long-range highway program.

Frank J. Whelan, Worthington Corporation of Harrison, N. J., was elected to serve as first vice-president

Frank J. Whelan

of C.I.M.A. Other officers named are Clarence E. Killebrew, Construction Machinery Division, Clark Equipment Company, Benton Harbor, Mich., second vice-president; and William A. Nugent, Thor Power Tool Company, Aurora, Ill., secretary-treasurer (re-elected).

National Gypsum Company Plans Major Expansion At Alexandria, Ind., Plant

Melvin H. Baker, chairman of the board of the National Gypsum Company, recently announced that work has started on the expansion and modernization of the Alexandria, Ind., plant. It is estimated that the project will cost several hundred thousand dollars.

The Alexandria plant produces rock wool accoustical tile, which is widely used in home construction. As a part of National Gypsum's five-year, $75,000,000 expansion program, the Alexandria project will more than double the present capacity when work is completed by midsummer. National Gypsum now has four new plants under construction and is expanding four others.

At Alexandria the installation of new processing and drying equipment is going forward under the direction of company engineers, who also designed the new facilities. Some of the original equipment is being redesigned. One major expansion feature is a new warehouse.

According to G. K. Willis, plant manager, more than 80 additional employees will be needed when the expansion has been completed.

Inland Lime & Stone Capacity Increased to 5,000,000 Tons

At the Inland Lime and Stone Company's Port Inland, Mich., plant recent expansion projects have increased the output to the degree that annual capacity is expected to total 5,000,000 tons for the 8-month season. (The 4-month winter season is lost to production because navigation is closed on the Great Lakes.)

During its two decades Inland Lime and Stone, a subsidiary of the Inland Steel Company, has steadily expanded its facilities and diversified its products. Originally designed for an annual production of 1,500,000 tons of flux and road stone, the plant, known as one of the world's largest and most efficient crushed stone producing setups, has also added agstone and sand.

Recent expansion work included the installation of belt conveyors and other equipment which will raise the screening capacity 50 percent.

The annual meeting of the Indiana Mineral Aggregates Association, Inc., will be held at the Claypool Hotel in Indianapolis, Ind., on March 16. Details of the convention program have not been released.

One-Family Home Building Doubled In Last Four Years According to Dodge Corp.

Contract awards for construction of single-family homes in the 37 eastern states have almost doubled in the last four years, according to Dr. George C. Smith an official of F. W. Dodge Corporation.

Addressing a session of the National Association of Home Builders convention, recently held in Chicago, on the outlook for homebuilding, Dr. Smith stated that total figures on housing starts or valuation tend to obscure the rapid growth in single-family houses, because of an offsetting decline in multi-family buildings.

"The 1955 Dodge Reports total of contract awards for one-family houses, reached $8,900,000,000," Dr. Smith said. "This was a gain of 21 percent over the previous record set in 1954, and an increase of 97 percent since 1951."

Dr. Smith cited the following factors which he felt explained the strong trend toward single-family homes: prosperity and availability of credit, as a "permissive factor"; the fact that in many areas it is cheaper to own than to rent, particularly when income tax deductions on mortgage interest and on local property taxes are taken into account; rapid growth in the proportion of old people in the population, since the over-65 group has the highest proportion of home ownership; the baby boom, putting a premium on the "house-and-yard"; and renewed emphasis on home entertainment and hobbies, including home workshops, partly as a result of increasing leisure time.

Richard O'Mara, consulting engineer on dust and combustion problems in the cement and other heavy industries, recently returned from a 4-month trip around the world. He visited cement and other plants in the European and Scandinavian countries, India, Japan, the Philippines, etc. Mr. O'Mara had been for many years connected with a manufacturer of equipment for these industries in an engineering and sales capacity.

Fire caused damage estimated at $200,000 at the V. DiFrancesco and Sons stone quarry in Phoenixville, Pa., recently when the crushing plant was destroyed. Firemen fought the blaze for three hours before bringing it under control.

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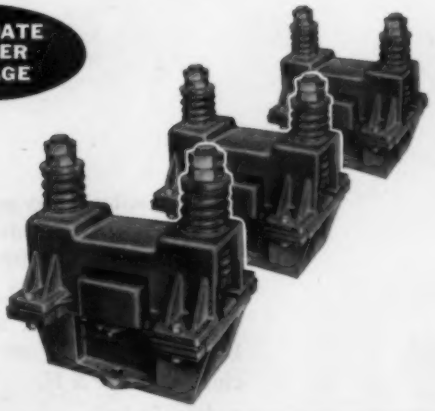

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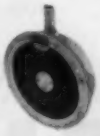

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Crushed Limestone Inst. Formed on National Basis—Riddle Elected President

A new association, the National Crushed Limestone Institute, Inc., has been organized independently of the National Agricultural Limestone Institute. Officers and directors have been elected to serve until February 16, when the first annual meeting of N.C.L.I. is being called. On that date there will be a luncheon at the Blackstone Hotel, Chicago, followed by a business meeting.

Officers of the organization are: John H. Riddle, president; Leonard S. Fry, vice-president; Alvin R. Armbrust, treasurer; Robert M. Koch, executive secretary.

One of the objectives of this new association is to work closely with Congress in developing the best possible highway program. To implement this work the organizing group has made arrangements to use the N.A.L.I. staff and facilities for a specified monthly payment. The address of the National Crushed Limestone Institute, Inc., is 619 F St., N.W., Washington 4, D. C.

U.S. Construction Sets Record—$42,250,000,000 Spent in 1955

Spending for new construction in 1955 totaled $42,250,000,000, establishing an all-time high for the ninth successive year, according to preliminary reports prepared jointly by the U. S. Departments of Commerce and Labor.

Outlays also set new records in 1955 for each month, as the total dollar value of new work put in place was 12 percent above the 1954 figure. Even after adjustment was made for price changes, this represented the highest volume on record.

Private construction expenditures rose 17 percent over 1954 to $30,250,000,000 in 1955, and public outlays to $12,000,000.

Increased residential building was the largest single factor in achieving last year's record rate, accounting for two-thirds of the total dollar gain over 1954.

Other types of construction which achieved an unprecedented dollar volume in 1955 were shopping and service establishments, churches, private industrial plants, office buildings, public schools, sewer and water lines, highways, and petroleum pipelines.

Expenditures were also greater in 1955 than in 1954 for private hospitals, social, and recreational buildings, and military facilities.

All other major construction categories (public industrial building, public housing, conservation, development work, farm construction, public hospital facilities, private educational building, and railroad construction) showed a decline.

With federal spending under that of 1954, except for grants-in-aid programs, the loss was more than offset by increased outlays by state and local funds.

The only major categories to show a more than seasonal decrease were commercial building, sewer and water construction, and all public nonresidential building, except school construction.

Marks Given Added Titles In Permanente Organization

William Marks, secretary of the Permanente Cement Company, has been named vice-president and secretary of the firm by action of the board of directors.

Mr. Marks joined the Kaiser organization in 1942 as an attorney, later becoming head of the legal department. At present, he is a director, a vice-president, secretary, and assistant treasurer of the Henry J. Kaiser Company. He is also a director, vice-president, and secretary of the Kaiser Aluminum & Chemical Corporation and of the Kaiser Steel Corporation. In addition, he is an officer in many of the other Kaiser-affiliated companies. He has been an officer of Permanente Cement Company since 1951.

A native of Los Angeles, Mr. Marks was graduated from Stanford University and obtained his law degree from the University of Southern California.

William Marks

Nonmetals Show Gains as 1955 U.S. Mineral Output Hits $15,800,000,000 High

Paced by strong increases in fuels, copper, and iron ore, mineral production in the United States jumped 11 percent to a new high of $15,800,000,000 in 1955, according to a Bureau of Mines summary.

The summary, based on preliminary data, says the previous high of $14,400,000,000 was set in 1953.

The 1955 rise, according to the report, was due almost entirely to increased production. Although appreciably higher prices were noted for copper and natural gas, prices generally remained steady.

Nearly all commodities registered higher values, with metals showing the largest increase—35 percent—and fuels and nonmetallic minerals each increasing more than 8 percent. However, the major cause of the upswing was substantial expansion in production in liquid and gaseous fuels, bituminous coal, copper, and iron ore, in that order. Zinc, lead, manganese ores, and tungsten also recorded large value increases.

Production values for the three major groups are shown below:

Mineral Output in Continental U. S.

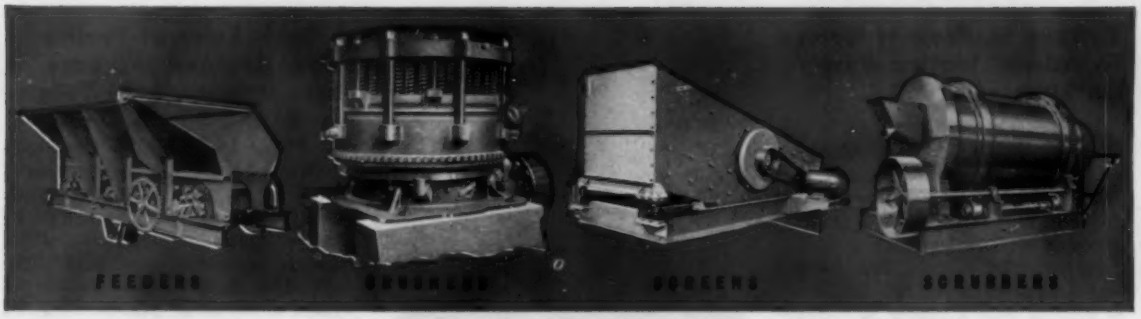
	1954 (Preliminary)	1955 (Estimate)
Nonmetallic minerals		
Fuels[1]	$10,008,000,000	$10,892,000,000
Other	2,641,000,000	2,866,000,000
Total nonmetallics	12,649,000,000	13,758,000,000
Metals	1,486,000,000	2,010,000,000
Grand total	14,135,000,000	15,768,000,000

Keeping pace with the general economy, the output of nonmetallics for the chemical industry, construction, and agriculture also rose, the Bureau found. Cement, gypsum, and aggregate materials all showed solid gains, and increased use of perlite was noted. Potash production went up, while phosphate rock remained at the 1954 level.

Fertilizer mineral raw materials hit another all-time high in 1955, according to the Bureau. Phosphate rock production, owing to a lengthy strike in Florida, increased only slightly, but potash production rose about 7 percent to an estimated 2,100,000 short tons, valued at $78,000,000. Output of nitrogen compounds continued upward, and new facilities for producing synthetic ammonia were completed in 1955.

[1]Fuels include natural gas, petroleum, natural gas liquids, asphalt and related bitumens, carbon dioxide, anthracite, bituminous and lignite coal, peat, and helium.

(*Continued on page* 80)



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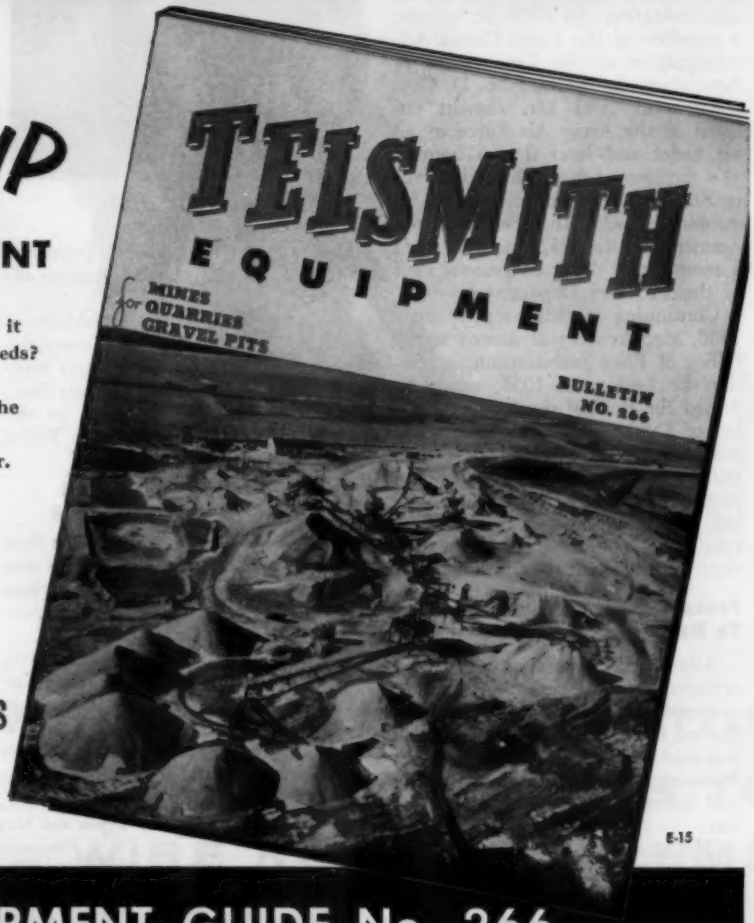

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Richard M. Prewitt Named To Administrative Post On Staff of N.C.S.A.

Richard M. Prewitt, a former member of the Chamber of Commerce of the United States, has joined the National Crushed Stone Association as assistant to the administrative director.

A native of Florida, Mr. Prewitt was graduated from the University of Florida with a degree in business administration. In 1939 he became a member of the Farm Credit Administration of the Department of Agriculture in Washington, D. C.

Early in 1943 Mr. Prewitt enlisted in the Army Air Force as an air cadet and later flew a bomber as a member of the Eighth Air Force in England. In 1946 he resumed his assignment with the Federal Government and in 1947 was appointed a member of the management staff of the Treasury Department.

Continuing in this capacity until 1950, Mr. Prewitt was named to the Office of Price Stabilization, a position he held until 1953, when he joined the staff of the U. S. Chamber of Commerce. Here he devoted most of his time to the issuing of various publications, planning and staging field conferences, and surveying, analyzing, and publicizing the results of chambers of commerce work throughout the nation.

Precast Gypsum Slabs Added To Newfoundland Firm's Line

Atlantic Gypsum Limited, a government-owned company operating a gypsum and wallboard plant in Corner Brook, Newfoundland, which was sold recently to Bellrock Gypsum Products Limited, London, England, will add precast gypsum slabs to its line.

The new owners plan to establish slab plants for home construction in St. John's and Corner Brook, Nfld., and Quebec City, Montreal, Ottawa, and Toronto. The first of those units should commence operations this summer.

Lightweight precast gypsum slabs have found good acceptance in Scotland and England. It is expected that they will reduce construction costs of dwelling units. E. A. Leja resigned his position as managing director, and N. F. Dowson has been elected his successor.

Carrier Built in Germany For U.S. Gypsum Affiliate

A 10,600-ton, self-unloading gypsum carrier, the *Empress*, was launched on January 10 in Hamburg, Germany, for the Gypsum Transportation Company, U. S. Gypsum affiliate.

Richard M. Prewitt

Albert V. Kastner, president of United States Gypsum Company, said the *Empress* will go into service in April, carrying gypsum from Nova Scotia and Jamaica to the company's Staten Island and Philadelphia plants.

Slight Gain in Lime Output Recorded for October, 1955

Domestic sales of open-market lime in October, 1955—830,689 short tons—increased slightly over the previous month's, according to reports by producers to U. S. Bureau of Mines.

Sales of building, refractory, chemical, and industrial uses increased; but a decrease was noted in agricultural lime.

The accompanying table shows sales by types and major uses.

Output, Sales of Perlite Show Decided Increase Over Industry's '54 Totals

Production estimates released by the Perlite Institute, the trade association of the perlite industry, show a total of 280,000 short tons of crude perlite mined and marketed by United States producers in 1955, with an estimated value of $2,280,000. This figure represents an increase of about 27 percent over the 1954 production of 219,703 tons reported by the U. S. Bureau of Mines.

Production of expanded perlite also hit an all-time high of about 220,000 short tons in 1955. Cash value of the expanded material is estimated at $11,660,000. In 1954 the Bureau of Mines reported a total of 195,499 tons, valued at $10,278,745.

Close to 80 percent of all expanded perlite is consumed by the plastering industry. Statistics compiled by the Perlite Institute show that approximately 40 percent of all plaster applied in the nation in 1955 used expanded perlite as the aggregate.

Sales of fine grades of perlite as a filter aid in competition with diatomaceous earth and similar materials also continued to rise in 1955. The Institute estimates that perlite filter aid sales topped 10,000 tons. Spokesmen for the perlite industry as a whole anticipate another substantial increase in sales, probably between 12 and 15 percent, in 1956.

The latest available information indicates that there are now 81 perlite processing plants operated by 72 companies in 31 states. Perlite mines are operated by 13 companies in six Western states.

Lime sold by Producers[1] in the United States, in Specified Periods of 1954-55, by Types and Major Uses, in Short Tons

	September	October		January-October	
	1955	1955	1954	1955	1954
By types:					
Quicklime	621,424	634,637	487,594	5,977,770	4,588,235
Hydrated lime	181,599	196,052	157,504	1,700,608	1,577,347
Total lime[2]	803,023	830,689	645,098	7,678,378	6,165,582
By uses:					
Agricultural:					
Quicklime	12,687	12,222	7,437	81,627	66,323
Hydrated lime	13,673	10,147	9,849	149,568	168,964
Total	26,360	22,369	17,286	231,195	235,287
Building:					
Quicklime	18,780	19,620	18,112	209,441	161,844
Hydrated lime	98,191	98,582	86,742	883,539	817,007
	116,971	118,202	104,854	1,092,980	978,851
Chemical and other industrial:					
Quicklime	388,661	395,800	305,873	3,697,375	2,921,967
Hydrated lime	69,735	87,323	60,913	667,501	591,376
Total	458,396	483,123	366,786	4,364,876	3,513,343
Refractory (dead-burned dolomite)	201,296	206,995	156,172	1,989,327	1,438,101

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

[2]Approximately 60 percent of lime produced is high calcium and 40 percent high magnesium.

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One of the best ways to find out "what goes" is to be right on the spot. That's why a Wickwire distributor is a wire rope expert—he practically lives with the industries he supplies with wire rope. He knows his customers' specialized problems from first-hand experience, and is able to give competent practical advice on the best construction—6x19, 6x37, 8x19, etc.—for them to use. And he delivers the type, size and length of wire rope they need directly from his warehouse stocks. They save time . . . storage space . . . paper work.

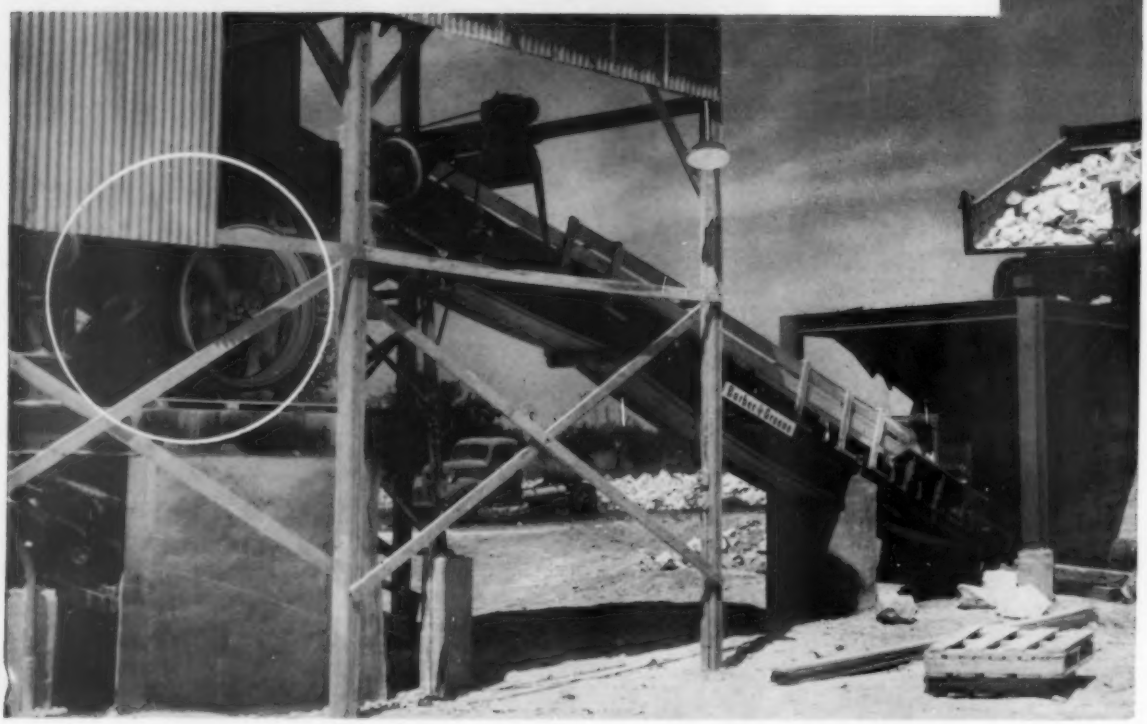
Your Wickwire Rope distributor is a good man to know. He's quality people handling quality products. Buy your wire rope and wire rope slings from him. You'll find that the many valuable services he offers far outweigh any apparent price advantage you might gain by buying direct.

CF&I WICKWIRE ROPE A CF&I PRODUCT

A PRODUCT OF THE COLORADO FUEL AND IRON CORPORATION

3153

Kue-Ken has greater capacity for its size than any other crusher



New crushing plant with 36" x 12" Kue-Ken jaw crusher (1½" product) and 36" Kue-Ken fine bowl gyratory crusher (minus ¼" product). 7 other Kue-Ken crushers have been producing profitably for this company for many years.

The far higher capacities of Kue-Ken Crushers often permit you to use a smaller size crusher than you ordinarily would and thereby save considerably in initial cost. Kue-Ken operates inexpensively. Jaw plates outlast those of other crushers 5 to 10 times, power consumption is far less, breakage from overload is eliminated by automatic flywheel release that is quickly reset. Filtered oil lubricates the mechanism in a sealed, dust-tight crankcase to prevent wear.

Write for catalog

STRAUB MFG. CO., INC. 8385 BALDWIN • OAKLAND, CAL.

DEALERS: WASHINGTON MACHINERY CO., Seattle, Wash.; LUND MACHINERY CO., Salt Lake City, Utah; CLOSNER EQUIPMENT CO., San Antonio, Texas; CONTRACTORS EQUIPMENT CO., Portland, Ore.; GARLINGHOUSE, FREMON CO., Los Angeles, Calif.; ANAHUAC MACHINERY CO., Mexico City, Mexico; UNIVERSAL EQUIPMENT CO., Vancouver, B.C.

KUE-KEN CRUSHERS

"LOWEST COST-PER-TON CRUSHING"

Jaw Crushers · Gyratory Crushers · Overhead Eccentric Crushers · Revolving Screens
Classifiers · Feeders · Rib Cone Ball Mills · Concentrating Tables · Vibrating Screens

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

$4,000,000 Plant Expansion Of Calaveras Cement Co. Put on "Rush" Schedule

Calaveras Cement Company has advanced by several months the completion date of its $4,000,000 plant expansion program at San Andreas, Calif., which originally was scheduled for the end of 1956.

Major item in the expansion program is a 360-ft. rotary kiln which is in the final stages of fabrication in the San Francisco shipyards of Bethlehem Pacific Coast Steel Corporation. This will be the fifth kiln for Calaveras, and will raise the company's production capacity by 30 percent to more than 4,500,000 bbl. of cement per year.

The shell of the kiln is being rolled out of ¾-in. steel plate on the same floor and with the same machinery and personnel used in the construction of ocean-going vessels. Bethlehem holds the job under subcontract from Allis-Chalmers Manufacturing Company of Milwaukee, Wis.

Calaveras already has completed the construction of new cement storage silos and new slurry tanks, which are a part of the overall expansion program. A new tertiary crusher will go into operation soon. Other installations will include new coolers, an electric precipitator, a multiclone, a thickener, raw and finish mills, auxiliary buildings, and materials-handling equipment.

Calaveras Cement Company executive and supervisory personnel during a visit to the San Francisco shipyards of the Bethlehem Pacific Coast Steel Corporation to watch the fabrication process involved in the manufacture of the cement company's new fifth kiln.

Molite, Inc., Processing Shale For Lightweight Concrete

Molite, Inc., Mandan, N. D., is presently mining and processing expanded shale for lightweight concrete blocks. The plant is operated on a 'round-the-clock basis to produce carloads of the lightweight material, which is strip-mined from a local deposit. The reserve is thought to be sufficient for ten years of operation. The shale is found in a layer 75 ft. thick, which is covered by 4 ft. of over-burden.

Blocks made of Molite weight 24 lb. and are 8 by 8 by 16 in. in size. These units are said to be 53 percent lighter than conventional units. The firm also produces expanded shale for bricks, concrete walls, floors, and bridge decking.

G. L. Schramm is the Mandan plant manager, and Ray E. Lemly of Rapid City, S. D., is president of the firm. Molite operates a similar plant in South Dakota.

Hildinger, Brown, Promoted By National Gypsum Company

The board of directors of National Gypsum has elected John W. Brown senior vice-president in charge of marketing and named him a director of the company. To succeed Mr. Brown as vice-president in charge of general sales, the board elected Wade W. Hildinger, formerly director of general sales.

Mr. Brown joined National Gypsum in 1935 as a salesman. He has served successively as a district sales manager, general sales manager, and most recently as vice-president in charge of general sales. He is vice-president of the Asbestos Cement Products Association.

Mr. Hildinger has been with National Gypsum since 1942, when he joined the company as a general line salesman. From this position he was promoted to district sales manager, director of dealer relations, assistant general sales manager and general sales manager.

W. W. Hildinger

Caum, Gilbert Appointed To New A.S.T.M. Positions

J. W. Caum and L. C. Gilbert have been designated senior assistant technical secretaries by the American Society for Testing Materials. Both Mr. Caum and Mr. Gilbert have been members of the A.S.T.M. staff since 1946 and have been responsible for staff contacts with numerous technical committees.

Mr. Caum, a metallurgist and a graduate of Pennsylvania State University, has been working with committees in the field of ferrous and non-ferrous metals. Mr. Gilbert, a civil engineer and a graduate of the University of Cincinnati, has been concerned with the work of committees on ceramics, cement, and concrete, and other highway and building construction materials.

Recent improvements at the Alsen, N. Y., plant of the Alpha Portland Cement Company were scrutinized by officials of the company for further possible expansion if the continued rise in cement consumption continues. Enlargement and modernization of the Alsen plant began in 1954 as a part of a $5,000,000 Alpha expansion program.

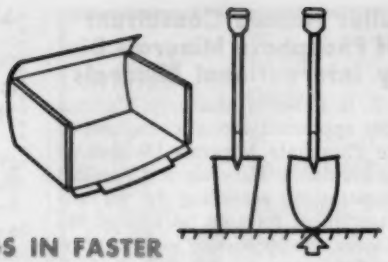
Postwar recovery of the cement industry in Japan has developed to the extent that that country now ranks fifth in the world in production of the construction material, far surpassing the prewar output.

5 BIG REASONS WHY ALLIS-CHALMERS move more dirt at

Watch an Allis-Chalmers scraper at work and you'll see that it loads bigger — travels and maneuvers more easily — puts more dirt right where you want it with the least tractor effort. Check features and you'll understand why an Allis-Chalmers scraper is able to outperform others. Then compare prices and you'll see that it gives you more scraper capacity per dollar — more for your money in every way.

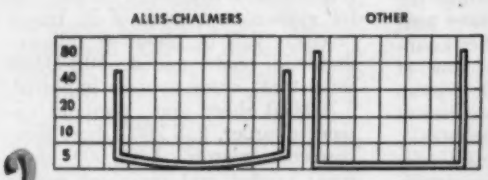
STRIPPING AND RECLAIMING IN ONE OPERATION. This Allis-Chalmers Model 315 Scraper strips overburden, then deposits and spreads it in a worked-out area of the pit. It has a struck capacity of 15 cu yd (19 cu yd heaped) and incorporates all the job-proved advantages found in other Allis-Chalmers scrapers, 2 to 19 heaped capacities.

SCRAPERS
lower cost



1 DIGS IN FASTER

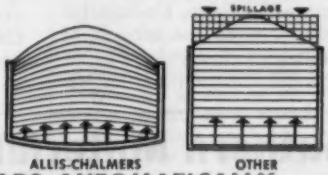
Curved and offset cutting edge on Allis-Chalmers scrapers concentrate all the tractor horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the soundness of this Allis-Chalmers design.



2 LESS LOADING RESISTANCE

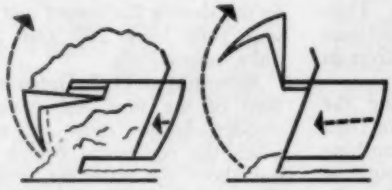
Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.

Diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.



3 HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.

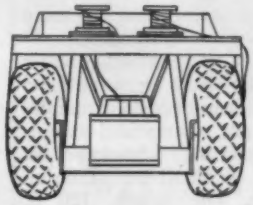


4 POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes foward. High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected. Ejector returns to loading position automatically by spring action and apron weight.

• • •

There is an Allis-Chalmers pull-type scraper for every tractor . . . every job. Write for literature or contact your Allis-Chalmers dealer.



5 HAULS, MANEUVERS EASILY

Big, low-pressure tires provide maximum flotation. The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points, high carrying position clears uneven ground.

Scraper main frame is shorter because exclusive linkage moves apron forward as well as upward to clear main frame at full height. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.

CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

Fuller Named Consultant Of Phosphate Minerals Div. By International Minerals

R. B. Fuller of Mulberry, Fla., has been appointed special consultant to the Phosphate Minerals Division of International Minerals & Chemical Corporation, according to an announcement released by George W. Moyers, vice-president in charge of the division.

Mr. Fuller has been associated with International for nearly 30 years and since March, 1953, has been assistant to the vice-president in charge of the Phosphate Minerals Division. Previously he was manager of the corporation's Florida Phosphate Department.

In 1951 Mr. Fuller received an honorary degree as Doctor of Laws from Florida Southern College for his contributions to the growth of the phosphate industry in Florida and for his participation and leadership in civic, educational, and charitable organizations throughout Florida.

Gypsum, Gypsum Products Show High 3rd Qtr. Totals

Domestic mine production of crude gypsum, as reported to the U. S. Bureau of Mines, continued through September at a very high rate, with an output of 2,871,031 short tons—20 percent more than in the third quarter of 1954, a period which was a record to that time for the months of July-September. Imports also continued at a high level during the third quarter, 1,326,683 short tons being brought in from other countries. About 500,000 more tons of domestic and imported crude gypsum was consumed in the third quarter of 1955 than in any other quarter.

Nearly all gypsum products were manufactured in record quantities. Of greatest significance to the industry were the following percentage gains for various products compared with the third quarter of 1954: Sanded and premixed perlite plasters, 45; formboard, 29; roof-deck plasters, 25; wallboard, 15; and lath, 11. All industrial plasters were manufactured in greater quantities than in the third quarter of 1954. Sales of gypsum portland cement retarder were up 4 percent during the quarter and 8 percent for the first 9 months of 1955. Agricultural gypsum declined 11 percent in the quarter, but cumulative annual totals increased.

Based on the three-quarter totals, it is estimated that totals for the year for gypsum and some of its major products will be about as follows: domestic crude mined, 10,500,000 short tons; crude gypsum imported, 3,700,000 short tons; portland cement retarder, 2,075,000 short tons; base-coat plaster, 1,800,000 short tons; sanded and premixed perlite plasters, 585,000 short tons; lath, 2,850,000,000 sq. ft.; and wallboard, 4,650,000,000 sq. ft.

Southern Materials Builds Fleet Of Welded-Steel Dravo Barges

Southern Materials Company, Inc., Norfolk, Va., for 17 years a major supplier of aggregate in the Richmond-Norfolk area, placed ten Dravo Corporation welded-steel barges of 800-ton capacity in the last several months. Performance of the first ten proved so satisfactory that ten more of similar size were ordered.

Increased carrying capacity, better towing characteristics for faster travel time, and greatly decreased maintenance costs are summarized as outstanding operating advantages of steel barges by Southern Materials management. The vessels, 128 ft. long, 34 ft. wide, and 8 ft. deep, were designed and built by Dravo Corporation, Pittsburgh, Pa. They were launched at Dravo's East Coast shipyard on the Christiana River in Wilmington, Del.

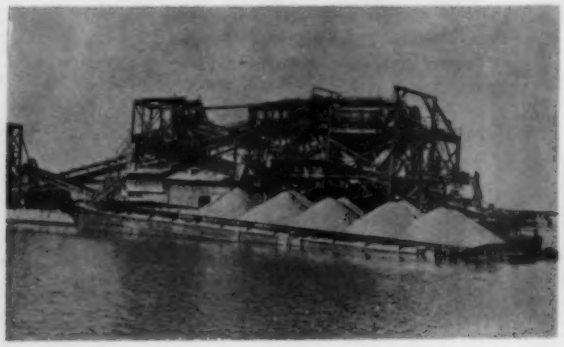
Southern Materials is using the new barges to carry aggregate from a dredging, screening, and crushing operation about 10 miles south of Richmond, to Norfolk, 90 miles down the James River. From this point it is trans-shipped by rail or truck to customers, or is processed at the terminal into ready-mixed concrete. Smaller barges operate between the dredge and similar terminals at Hopewell and Richmond, as well as a short distance down river from the dredging site. Southern Materials uses a fleet of 150 special trucks in its ready-mix concrete business.

Producing more than 15,000 tons of material in a 10-hour day, the company operates seven tugs for towing barges. Five, which make the long haul to Norfolk, are powered by 450-hp. engines, while the two on the shorter Richmond and Hopewell runs have 260 and 225-hp. units, respectively.

According to C. F. Gregson, president of the firm, the payload of wooden barges must be reduced when the equipment begins to dry out above the waterline, weakening the wood. Steel barges can be loaded to their 800-ton limit for each trip down river. Another important profit-making advantage of the steel barges, he said, is the decrease in towing resistance, and elapsed time for round-trips between Richmond and Norfolk has been shortened considerably.

These loaded steel barges have cut running time between Southern Materials Company's aggregate processing plant in the James River below Richmond to the firm's Norfolk terminal on Hampton Roads.

Each barge can carry 800 tons of gravel. Ten of these steel vessels haul sand and gravel from this dredging and processing plant below Richmond to Norfolk, 90 miles down the winding, treacherous James River.



30 Years Ago in Pit and Quarry

By WALTER E. TRAUFFER

THE February 1, 1926, issue of PIT AND QUARRY was devoted entirely to a complete coverage of two big industry conventions—that of the National Crushed Stone Association at Montreal, and that of the National Sand and Gravel Association at Atlanta—both held January 19 to 21, 1926. The crushed stone group, headed by President Otho M. Graves, concentrated on the progress of the industry and the association, based on the new bureau of engineering and the service it would render to the industry. Speakers included A. T. Goldbeck (the new engineering director), C. M. Doolittle, F. W. Schmidt, W. Scott Eames, E. J. Krause, John Rice, W. L. Sporborg, H. Landa, R. B. Tyler, O. P. Chamberlain, P. B. Reinhold, W. F. Wise, A. G. Seitz, A. B. Mack, H. H. Brandon, and many others.

Otho M. Graves was re-elected president and the new regional vice-presidents named were A. R. Wilson, G. J. Whelan, Sterling Tomkins, Thomas McCroskey, W. R. Sanborn, and C. H. Doolittle. The manufacturers' division elected M. B. Garber president, and S. R. Russell and N. S. Greensfelder to serve with Mr. Garber on the N.C.S.A. board of directors.

Also presented in this issue were several papers from the N.C.S.A. convention. These were entitled *Limestone For Plants, Animals and Man,* by Dr. F. E. Bear, director of the Soils Department, Ohio State University; *Developments in The Asphalt Industry with Relation to Crushed Stone,* by Prevost Hubbard, chemical engineer, The Asphalt Association; *Fire Hazards of Stone Crushing Plants,* by D. C. Souder, director, insurance and safety, the France Stone Company.

The National Sand and Gravel Association devoted most of its meeting to ways and means of improving the status of sand and gravel and the industry. The speakers included President John Prince, Treasurer J. L. Shiely, Executive Secretary T. R. Barrows, Engineering Director Stanton Walker, E. W. Dienhart, A. J. R. Curtis, Eugene F. Olsen, and others. Much of the discussion concerned the concrete products industry and its economic relationship to the sand and gravel industry. One entire session was devoted to a meeting of the Concrete Products Division.

New officers elected at this meeting were as follows: Hugh Haddow Jr., president; R. C. Fletcher, vice-president; and J. L. Shiely, treasurer. Others elected to the executive committee were J. E. Carroll, J. D. Roquemore, George A. Rogers, H. H. Halliday, H. S. Davison, J. H. Blanton, and John Prince.

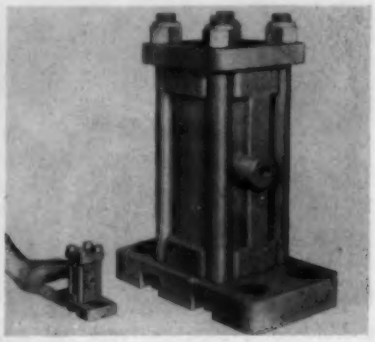
Papers from this convention reprinted in full in this issue included the following: *Special Sands as By-Products,* by W. M. Weigel, mineral technologist, U. S. Bureau of Mines; *Standardized Specifications for Sizes of Sand and Gravel,* by Stanton Walker, director, Engineering and Research Division, N.S.G.A.

The February 15, 1926, issue was a more typical one, but it did carry one paper presented at the N.C.S.A. convention: *The Human Element in Plant Operation,* by A. B. Mack, assistant general manager, Kelley Island Lime & Transport Company. *River Sand and Crushed Flint Compared as Fine Aggregate for Concrete* was the title of a paper by E. C. L. Wagner, consulting engineer of Kansas City, Mo., present at a meeting of Missouri producers.

Reported in this issue was the tragic death of T. R. Barrows, executive secretary of N.S.G.A., who contracted influenza on the last day of that association's convention in Atlanta and died ten days later on January 31. Also announced was the passing on January 27 of William Dickinson, vice-president of the Marquette Cement Mfg. Co.

Plant operating articles dominated this issue. Sand and gravel plants of the following firms were described: The Hartland Washed Sand & Gravel Company, Hartland, Wis.; Neal F. Ryan, near Schenectady, N. Y.; A. Beatrice & Son, Newton Lower Falls, Mass.; Pearl River Gravel Company, near Jackson, Miss.; and Spruce Pine Sand & Gravel Company, Spruce Pine, Ala. Crushed stone operations described included those of the Standard Paving Company, Tulsa, Okla., and Gebo & Bushey, Plattsburg, N. Y.

If so, you have a slight idea of the force exerted by one blow of a small Cleveland Bin Vibrator. Just imagine this happening 10,000 times, per minute. That's what can be expected from the smallest of our air vibrators, the 1" type F And if you need real brute force, there are seven larger sizes.



You can see why stuck bins get unstuck in a hurry. The beauty of it is that when properly mounted these vibrators deliver the punch of a stevedor with absolutely no damage to the bin. Write for further details.

Air or Electric

Portable or Permanent

Silent or Standard

2710 Clinton Avenue • Cleveland 13, Ohio

Shovel-loading big-chunk rock into Dumptor — square body opening provides 64 square feet of target for easy loading over the side, or either end. It's the heavy-duty hauling unit with a ton of strength for every ton of payload capacity!

Plenty of power on the haul — (check high ratio of H.P.-to-loaded-weight in Dumptor story on next page). Dumptor also travels at same speeds in either direction for fast, no-turn shuttle hauling.

One-second gravity-dump speeds haul cycles. Dumptor has no troublesome body hoist, no hoist maintenance. Gravity-dump never balks, and never wears out.

IN ROCK LIKE THIS

you need Dumptors

When you are loading 1½ to 2½ yards of rock at a single pass, hauling units need plenty of strength to last. With Koehring heavy-duty Dumptor, there's a ton of strength for every ton of payload capacity. *It's built for rock.* Sides and ends of all-welded 6-yard body are heavily rib-reinforced. Double-plate bottom, lined with multiple steel beams, cushions the shocks of rock loading. Bolted or free-swinging kick-out pan adds another ½" steel plate to Dumptor bottom for extra strength.

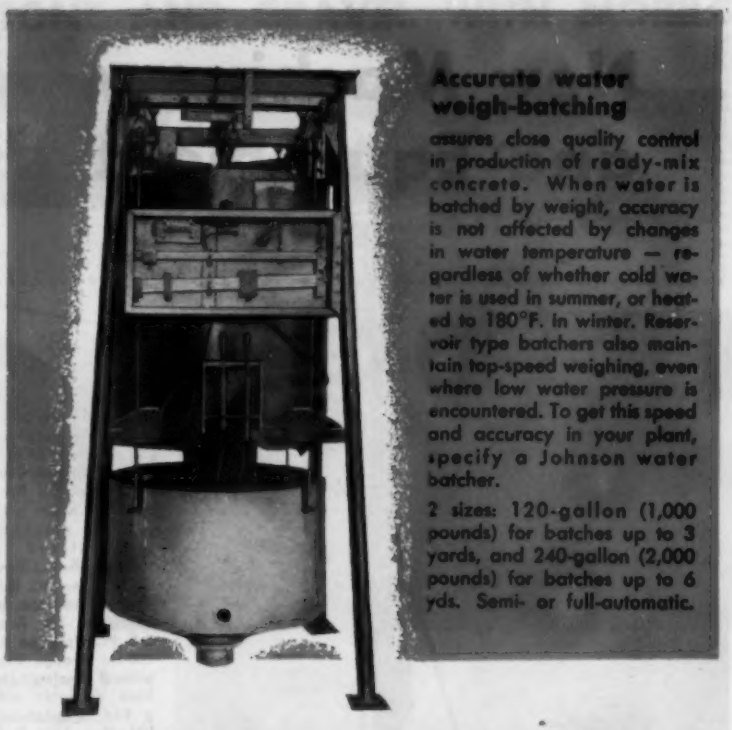
There's plenty of strength, too, in the heavily-trussed chassis to take constant pounding of heavy loading and rough, off-road hauling. What's more, Dumptor has no leaf springs — just one big snubber-type chassis spring on the steering axle — none on the drive axle. Big drive tires eliminate the need for more springs, absorb loading and hauling shocks — save spring maintenance.

Even with all this heavy-duty strength, Koehring Dumptor® still has more than 6 H.P. for every ton of loaded weight. It accelerates fast, pulls through soft ground with less shifting, climbs 24% grades fully loaded. If you have a tough hauling problem, see your Koehring distributor about this heavy-duty 6-yard Dumptor. Why not call him now?

KOEHRING COMPANY

MILWAUKEE 16 WISCONSIN CX642

Subsidiaries: JOHNSON PARSONS KWIK-MIX

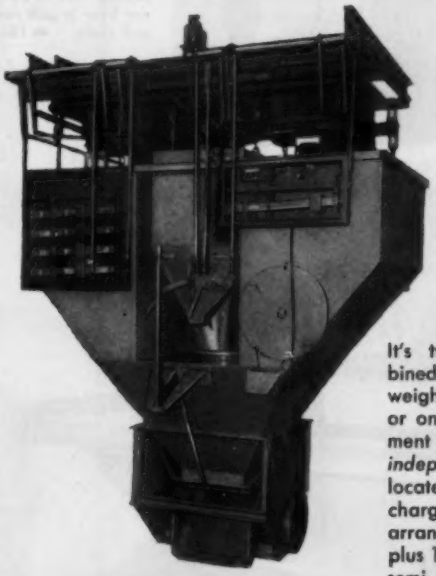


Accurate water weigh-batching

assures close quality control in production of ready-mix concrete. When water is batched by weight, accuracy is not affected by changes in water temperature — regardless of whether cold water is used in summer, or heated to 180°F. in winter. Reservoir type batchers also maintain top-speed weighing, even where low water pressure is encountered. To get this speed and accuracy in your plant, specify a Johnson water batcher.

2 sizes: 120-gallon (1,000 pounds) for batches up to 3 yards, and 240-gallon (2,000 pounds) for batches up to 6 yds. Semi- or full-automatic.

2 WAYS to increase batching efficiency



Central cement-feed

prevents "gumming", reduces dusting, and pre-shrinks materials. You get this unique advantage with Johnson Concentric batcher, because the aggregates are arranged concentrically around the cement. All ingredients are intermingled as they flow through discharge.

It's two separate batchers combined in one unit. Aggregates are weighed on accumulative dial scale, or on individual beam scales. Cement is weighed separately on an *independent scale* in a centrally-located, sealed hopper. Dual discharge available. Sizes: 2 to 8 yds., arranged for 2 to 8 aggregates, plus 1 to 4 types of cement. Manual, semi- or full-automatic operation.

Want more facts?

mail to: C. S. JOHNSON CO., Champaign, Ill. (Koehring Subsidiary)

Send us literature on: ☐ Water batchers ☐ Concentric batchers

NAME_____ TITLE_____

COMPANY_____

STREET_____

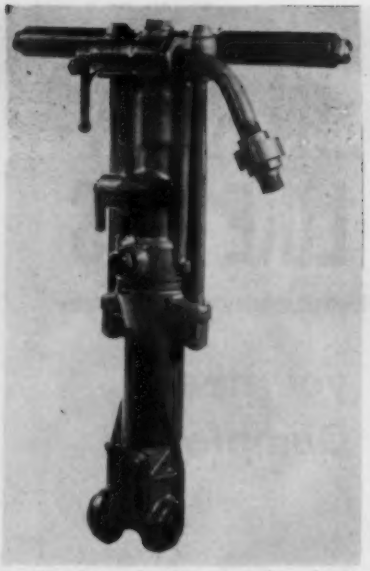
CITY_____ STATE_____

New Machinery and Equipment

(For More Information Use Card on Page 99)

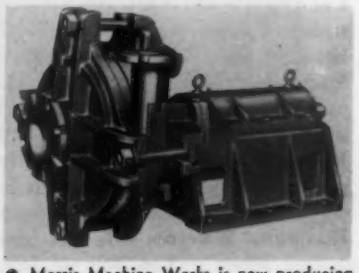
● Fast drilling combined with economy and simplicity of operation are the main features of the Record HS deep rock drilling machine manufactured by Stenuick Bros., Fontaine-L'Eveque, Belgium. Pneumatic in operation, the Record HS drills up to 150-ft. through rock without losing the bore diameter with a 4-in. tungsten-carbide tipped bit. Drilling speeds range from 10-ft. per hour in hard rock to 20-ft. per hour in soft rock and shale. ← (51)

● The largest aggregate washer-classifier to be manufactured by the Eagle Iron Works is now available with a special feature, replaceable Ni-Hard shoes. These shoes are on the wearing edges of the welded steel ribbon-type screws and may be removed without replacing the entire unit. The new flare design of the tub provides greater settling at the feed-in end of the washer-classifier. ↑ (54)



● Thor Power Tool Company has placed in production a new version of its Model 75 rock drill. The Model 77 air-operated drilling tool, which features a latch-type front head to assure positive lock when pulling drill steels, has a maximum capacity of 20-ft. in hard rock. ↑ (52)

● Rotary Air Lock Feeders, manufactured by the Prater Pulverizer Company, are now available in seven models. Designed in the standard duty, heavy duty, and blow-thru series, the Prater models have capacities of .2 cu. ft. to .72 cu. ft. per revolution with 8- and 10-in. diameters at the inlet opening. ↑ (53)

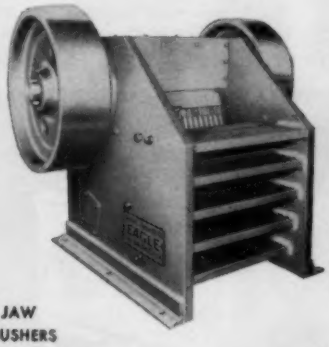


● Morris Machine Works is now producing a heavy duty and suction slurry pump, the Type Q, which is available in seven models from 2- to 6-in. sizes. Of all metal construction, this low speed, continuous pump was designed to handle abrasive slurries such as cement and sand. ↑ (55)

PRODUCE MORE STONE AND GRAVEL WITH MOBILE

Eagle Crushers

Portable Eagle crushing plant operated by Harry Miller Contracting Co., Suffield, Ohio, delivers pit run sand and gravel at rate of 100-125 yds. per hour for cushioning concrete super-highway nearby. Whole layout can be moved as gravel is consumed. (Power source is electric generator set—could be gasoline or diesel direct drive.)



JAW CRUSHERS

HAMMER-MILLS

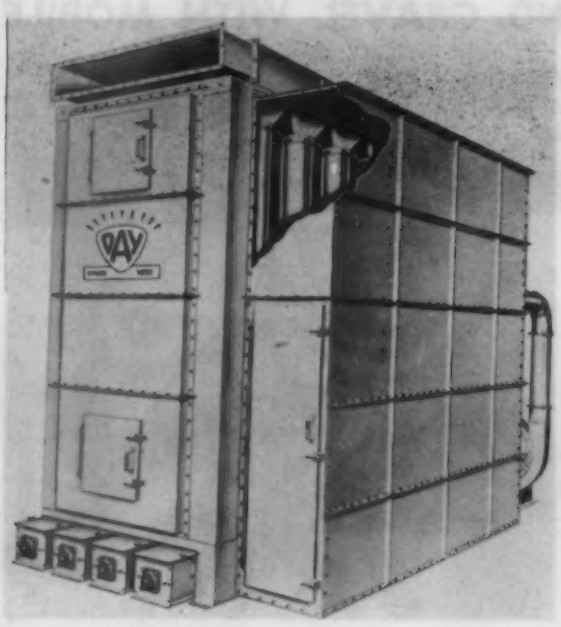
Eagle Crushers—both jaw type and hammermill—bear the characteristic marks of the experienced manufacturer—simple design, durable construction, ease of servicing. Eagle originated the one-piece, electrically welded frame —has pioneered in the field of portable, compact, crusher plants like the one above.

There is a range of sizes in the jaw crusher—and a variety of styles (skid-mounted, trailer, portable, roadside). Likewise, the hammermill or impact breaker is made in several sizes and for various applications—is particularly well suited to limestone reduction.

EAGLE CRUSHER CO., Inc. GALION OHIO-U.S.A.

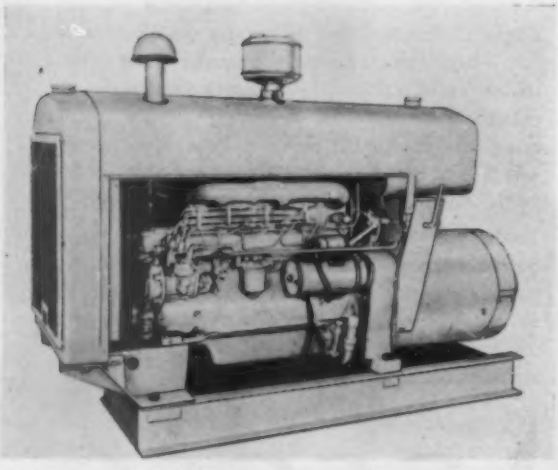
JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

You are invited to consult our engineers on your crusher problem — no obligation!



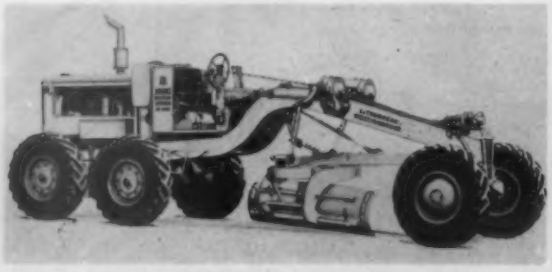
● A recent bulletin published by the Day Co. fully describes this reverse jet dust filter currently in production. The new design speeds inspection of the operating mechanism with small access doors located at the top and bottom of the filter chamber for periodic lubrication of the gearmotor drive which operates the pressure blower and screw conveyor discharges. The large walk-in door makes entry possible into the filter housing. ← (56)

● Thor Power Tool Co.'s newest design in wagon drills is this BW-2 which has fully automatic controls grouped on a movable 5 hp. air motor. The 4-in. drifter features steel hook backhead with 800- to 1,000-lb. pulling power for pulling steels. ↑ (57)



● A new series of lightweight, large-capacity generating sets has been introduced by the Universal Motor Company. The 1800 Models are powered by 4-cycle diesel engines of 6 cylinders and are coupled to generators turning at 1800 r.p.m. The 1800's are manufactured in 10, 15, 25, and 35 k.w. and are furnished with controls to meet job requirements. ↑ (58)

● A new open mouth bag filling machine, which is reported by the Kraft Bag Company to increase production and reduce packing costs, is now available. Capable of handling 22 to 24 100-lb. charges per minute, this automatic bag filler has a capacity of 25 to 200 lb. ↑ (60)



● LeTourneau-Westinghouse Company has announced numerous changes in horsepower ratings of the Adams motor graders. The No. 660 now has a 150 hp. engine replacing the 140 hp. The No. 550, formerly powered by a 115 hp., is now equipped with 123 hp. motor. Other changes include the No. 440, 100 hp. previously, now rated at 104 hp., and the No. 330, from 75 to 80 hp. ↑ (59)

Shovel-Crane owners!

sharing your profits with old-fashioned clutches?

Remember the day the weather was fine, footing good and the haulers were really rolling...

THAT was the day you thought the job was going to move out ahead of schedule. But the clutches were getting hotter all the time. By mid-morning the dragline went down for clutch adjustment—the heat had done it. After the noon break, the same thing happened. How much production do you figure you were penalized for having a rig with old-fashioned clutches?

Avoid costly downtime

With a Link-Belt Speeder you get modern power, hydraulic-actuated clutches that automatically compensate for heat and normal lining wear. In fact, most Link-Belt Speeder owners will tell you these clutches are so good, adjustment is needed only once or twice a month.

It's just one of many ways you're big money ahead with a Link-Belt Speeder.

Get the complete story from your distributor. He'll show that whatever rigs you need—crawler or rubber-tired . . . ½ to 3-yd, 8 to 60-ton capacity—you'll earn bigger return on your equipment dollars with a Link-Belt Speeder. Or write for literature—LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA. 13,501

LINK-BELT SPEEDER

Builders of a complete line of crawler and rubber-tired shovel-cranes.

There is No Worry about Failures or Maintenance Costs with TRU-LAY *PUSH*-PULL Remote Controls

• On Heavy Equipment they are being adopted by an ever-increasing number of engineers because they are Rugged, Trouble-Free, Accurate and Adaptable to all sorts of mechanical situations.

Long Life is a matter of record. We have never heard of a TRU-LAY *Flexible* PUSH-PULL CONTROL wearing out in normal service. Failures, that sometimes harass users of more complex controls, are eliminated by the use of these simple, positive-action Push-Pulls.

Dependable Operation of these controls is a certainty, even under the most adverse conditions . . . HOT as jet engines (Note: TRU-LAY PUSH-PULLS are actually performing on hot jet applications) . . . COLD to 70° F. below zero . . . SOAKIN' WET . . . ABRASIVE . . . or just plain TOUGH.

Freedom from Trouble is assured because of such features as . . . full protection of the inner, working member by the tough flexible conduit . . . lubrication of the working member *for life* during assembly . . . seals that keep moisture, dust and other foreign matter out of the unit . . . cold swaging of fittings that makes them integral parts of the control unit.

Accuracy is inherent in the basic design of TRU-LAY PUSH-PULLS. They are precision products, not gadgets.

Capacity ranges from light jobs up to jobs of 1,000 lbs. input. These Push-Pulls will handle jobs 150 feet or more from the control point.

Adaptability to all sorts of mechanical situations explains, in large measure, the use of TRU-LAY PUSH-PULLS on literally hundreds of different machines and equipment. The *flexibility* of these controls makes it possible to provide positive, remote-action whether anchorages are fixed or movable . . . it damps out noise and vibration . . . and reduces the number of working parts.

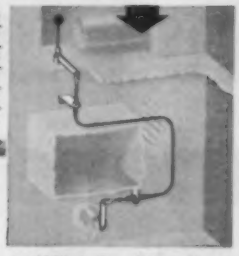
• • •

TRU-LAY PUSH-PULLS are "Solid as a rod but *Flexible* as a wire rope." This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all elements of remote controls.

***Advantages** of Tru-Lay Push-Pull flexibility and simplicity are pictured below*

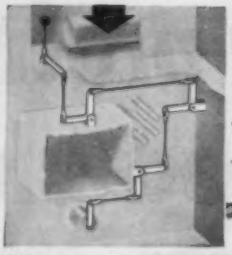
TRU-LAY PUSH-PULL

Simple
One Moving Part
Life-Time Service
Life-Time Accuracy
Low over-all Cost
Noiseless



MECHANICAL LINKAGES

Complex
Many Parts
Many Points of Wear
Increasing Back-Lash
Loss of Accuracy
Vibration
Rattles



Widely Used on Heavy Equipment

• These accurate and dependable Remote Controls are used on a wide range of Construction Equipment . . . Tractors and their accessories, Power Shovels, Winches, Graders, Road Oilers, Dump Trucks, Snow Plows, Engine-driven Pumps, Crushers, etc.

On such equipment TRU-LAY PUSH-PULLS are used for the remote control of Transmissions, Hydraulic and Air Valves, Brakes, Clutches, Throttles, Chokes, Governors, Power Take-Offs, and on many other applications.

*Our **DATA FILE** will answer your further questions*
Write for a copy, without obligation

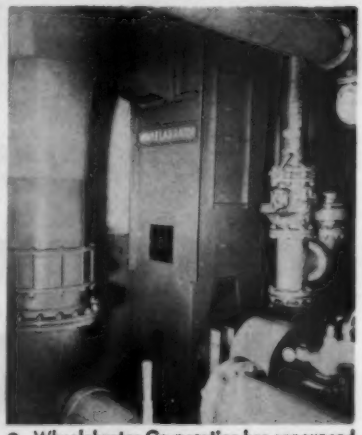
Push-Pull DATA FILE

ACCO

AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

501-K Stephenson Bldg., Detroit 2
2216-K South Garfield Ave., Los Angeles 22 • 929-K Connecticut Ave., Bridgeport 2, Conn.

• A recent development in Hudson Multi-wall Bags, made by the Hudson Pulp and Paper Corporation, is the "snap open" sack that "opens with a twist of the wrist." Spillage and product loss are eliminated in the new opening method which provides the user a choice of size openings. (61)



• Wheelabrator Corporation has announced Wheelabrator Ultra-Filtration, a process developed for cleaning atmospheric air with industrial-type filtration equipment. The method is designed for 720,000 cu. ft. per minute of city air, reducing dust from 5.21 to .04 mgs. per 1000 cu. ft. (62)

• Mavor and Coulson Limited, makers of sectional belt conveyors and grit-proof idlers, have announced a new line of idler rollers of three or five-shaft troughs. Made of cast iron, the rollers offer corrosion resistance, low friction bearings, a mechanical assembly to safeguard the bearings, and simple repair methods. (63)

Hard, Tight, Blocky Tungsten Ore Loaded by Eimco Tractor-Excavator

Location: Nevada

Haulage Equipment — 2 - 20 ton trucks

Trip — 2,000 feet each way

Present Production — 200 tons per hour

Machine Capacity — Idle 40-50% of time waiting for trucks

Operation — Machine loads 20 ton trucks from pit 3 mins. each, loads 20 ton trucks from stock pile 1½ mins. — also used to load waste from around mill, loading concentrates and as a prime mover for heavy machinery and supplies.

Report — The solid rough bottom in the pit is hard on tracks and rollers but to date no troubles have been reported. Operators say "It's much better than a shovel because there's no swing and I don't have to be square with a truck to load it. I can load from almost any angle. It's really built, you can't hurt it." Owners say — "It's doing all that was said for it and it's a most versatile machine. It has a thousand and one uses. We use it for many different jobs besides ore excavation including loading waste at the mill, for fill around the camp, loading concentrates and even as a come-a-long when handling heavy machinery and supplies."

This mine has four other Eimco loaders underground and know that Eimco's are built to handle the tough jobs.

Eimco's are made simple for easy handling and easy maintenance. All parts on the Eimco are alloy steel, cast or fabricated. The Eimco 105 Tractor-Excavator is designed for years of service. Many reports show 30%-100% longer service life with an increase in production of 25% to 400% over comparable equipment.

Before you buy — do yourself a favor — compare the Eimco with any other equipment.

THE EIMCO CORPORATION

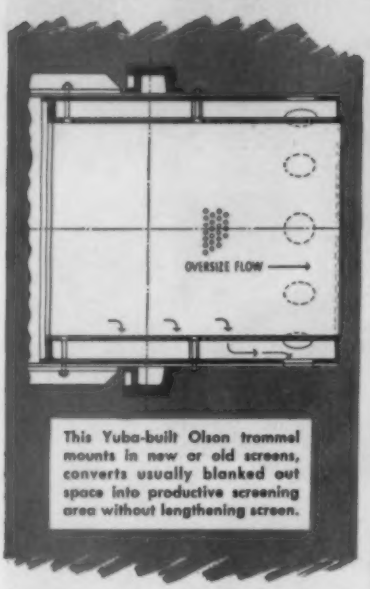
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Pasadena, Calif. Houston, Texas Vancouver, B. C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

EIMCO

B-172

Here's Way To Increase Your Screen Capacity 25%



This Yuba-built Olson trommel mounts in new or old screens, converts usually blanked out space into productive screening area without lengthening screen.

Your screen capacity actually can be increased as much as 25%—without adding to the screen length—by mounting Yuba-built Olson trommels inside your present screens.

Olson patented trommels convert screen space usually blanked out by tread rings and end plates into productive screening area. Plates are taper drilled with holes of size and spacing suited to your requirements. Effective screening is thus extended to full length of your screens. You can get better classification of material, too, through additional perforated area. Effectiveness and freedom from downtime proved by more than five years of field use.

For your present screens or for new ones, Olson trommels, made of abrasion resisting steel plate to fit your needs, can be either field or factory installed. Send details and general arrangement of your screen, hole sizes and spacing needed. Estimates furnished promptly; no obligation.

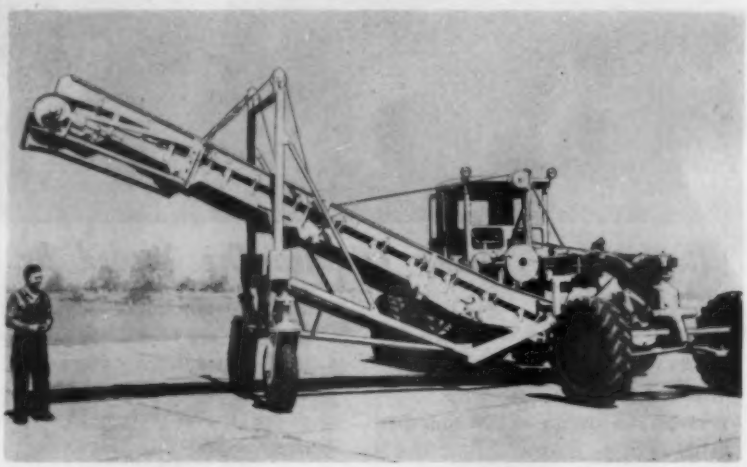
YUBA DREDGES — COVERS DOMESTIC AND FOREIGN

92

YUBA MANUFACTURING CO.

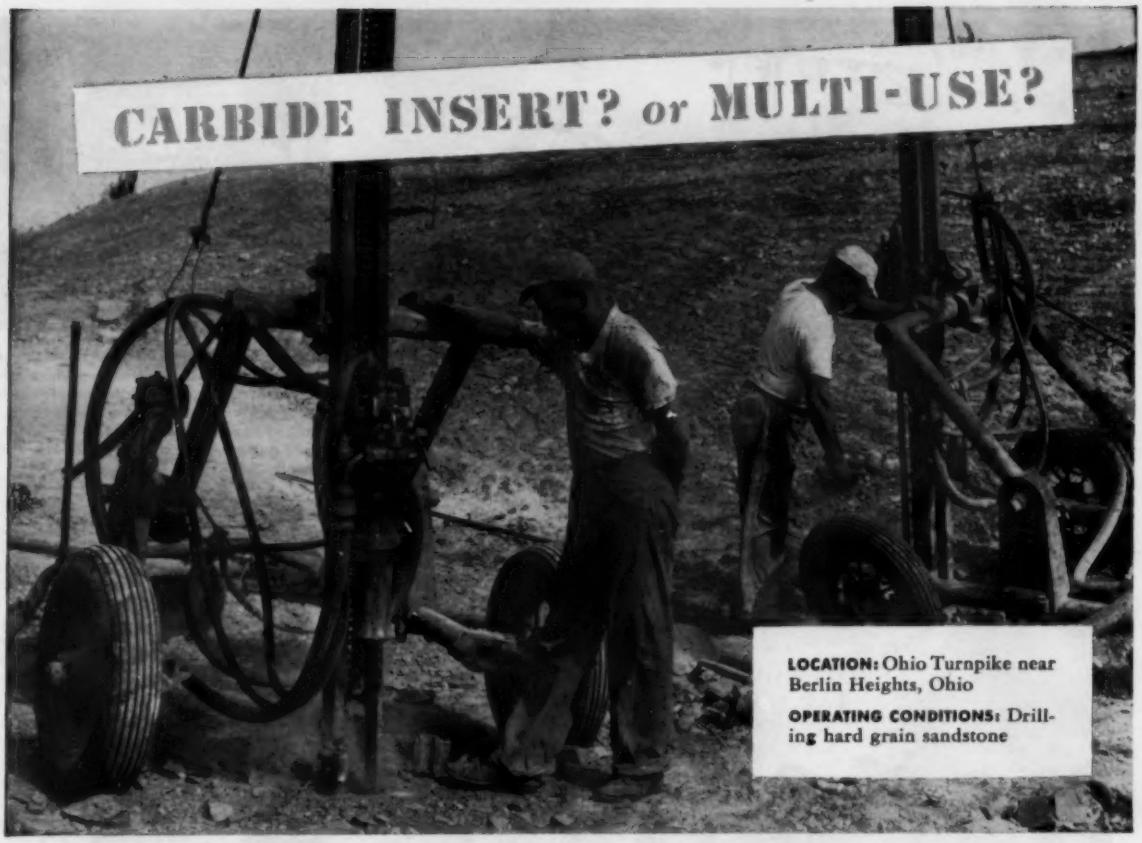
Room 651 • 351 California St. • San Francisco 4, Calif.

● Athey Products Corp. has introduced a new cat and trailer, the PR 15-Cat DW 15 Rear Dump Trailer. Welded into a single unit for handling rock or any other material, the PR 15 offers a speed up to 31.3 m.p.h. with a capacity of 15.6 cu. yd. Angle turns of 90 degrees are possible and a three-stage hydraulic hoist tilts the body to 60 degrees for ejection of materials. The cat is powered by a 186 hp. engine. (64)



● LeTourneau-Westinghouse's recent purchase of the Reisser Corp.'s entire output of Elegraders has enabled LeTourneau to broaden their line of motor graders. Engineered for use on the Models 550, 610, and 660 motor graders, the Elegrader has also been adapted for attachment to the Caterpillar No. 12 grader. Mounted on the No. 660 grader, the Elegrader will handle up to 1,500 cu. yd. per hour. (65)

● The "Quick-Way" Model 100, one of four new models now in production by the "Quick-Way" Truck Shovel Co. Included are a 5-ton, ¼ cu. yd. shovel; an 8-ton, ⅜ cu. yd.; a 10-ton, standard ½ cu. yd.; and a 12½-ton, heavy duty ½ yd. shovel. Advance features are up and down power booms, anti-friction bearings, chain and sprocket drive, and forced-feed, filtered lubrication. (66)


CARBIDE INSERT? or MULTI-USE?
LOCATION: Ohio Turnpike near Berlin Heights, Ohio
OPERATING CONDITIONS: Drilling hard grain sandstone

Switch to TIMKEN® multi-use bits helps lower cost of drilling sandstone on Ohio Turnpike for H. N. Rodgers & Sons Company

WHEN H. N. Rodgers & Sons Company started drilling 230,000 yards of sandstone on the Ohio Turnpike near Berlin Heights, Ohio, they found their costs were running too high. After analyzing their technique, they made some changes. One was a switch to Timken® multi-use bits. Now costs are down. And Timken multi-use bits have been used ever since.

Timken multi-use bits usually give best results when you drill ordinary ground. With correct and controlled reconditioning, they give the lowest cost per foot of hole when full increments of steel can be used.

But they may not be the best answer for *all* your drilling problems!

When ground is hard or abrasive, Timken carbide insert bits drill faster and more economically. They're your best bit for constant-gauge holes, small diameter blast holes and extremely deep holes.

Timken multi-use and carbide insert bits also save time when your drillers change bits. They're interchangeable in the same thread series. And dozens of different Timken bits fit the same drill steel.

Both Timken multi-use and carbide insert bits are made from electric furnace Timken fine alloy steel. Both have special shoulder unions that protect threads from drilling impact.

To find out which type bit will cut costs most on your job, call on the Timken Rock Bit Engineering Service. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

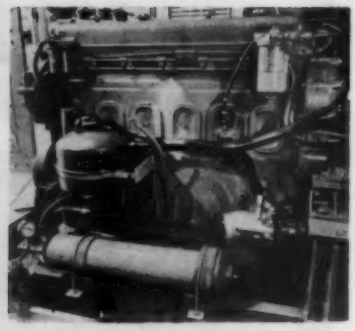
Timken threaded carbide insert rock bit

your best bet for the best bit ... for every job

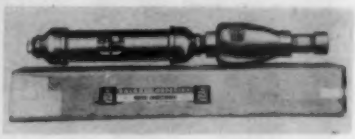
TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

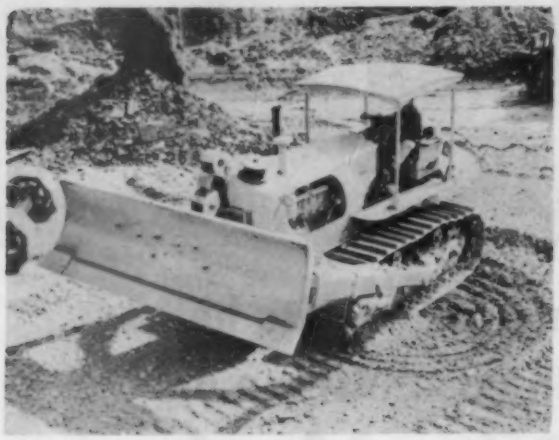
● Adams TraveLoaders, a product of the Adams Division, LeTourneau-Westinghouse Company, are self-propelled, belt-type loaders for all loose materials. With a choice of two conveyor lengths, the TraveLoader is powered by an International gasoline or General Motors diesel engine which furnishes power for the feeder and conveyor as well as the propelling machine. Working speed minimum is .29 mph while maximum traveling speed is 26.7 mph. It is claimed the TraveLoader has a capacity of 10 cu. yd. per minute in loose material. ▲ (67)



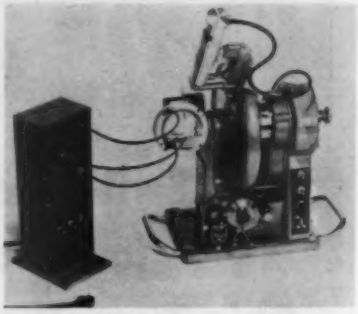
● The Hydrostarter system, manufactured by Aeroproducts Operations, Allison Division, General Motors Corp., includes a hydraulic motor, a piston-type accumulator, a manually-operated pump, and an engine-driven pump and accumulator. ▲ (68)



● Packard Manufacturing Co. has made available a new water conditioner that eliminates and prevents scale and corrosion. Capacity is from 6.5 to 1,760 gal. per minute. ▲ (70)

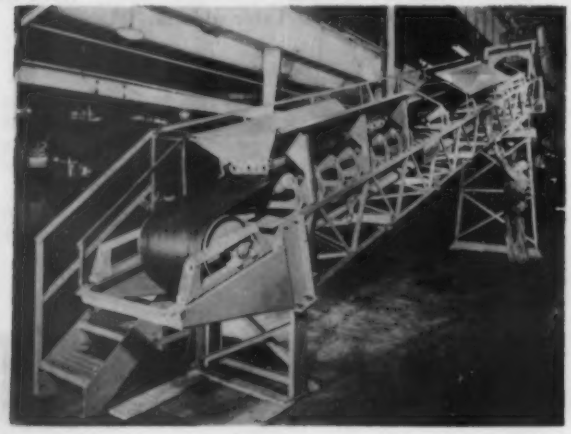


● Announcement has been made by the Oliver Corporation of a new and improved Model OC-18 Crawler Tractor. Powered by an Oliver full diesel engine delivering 161 hp., the new OC-18 mounts a full line of matched allied equipment. Equipped with Power-Turn Steering, the OC-18 allows the operator to decrease speed by 38 percent with an increase in drawbar pull or push up to 60 percent, depending on weight and traction. ◀ (69)

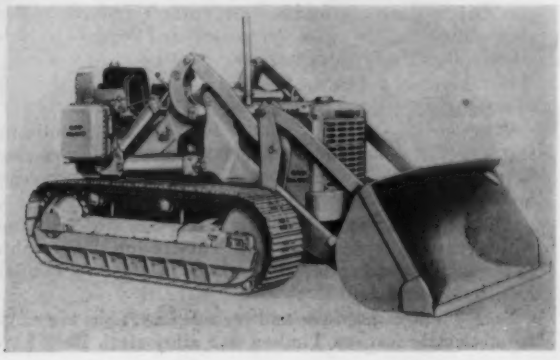


● A Norelco Pole Figure Device, a product of the North American Phillips Company, Inc., Research and Control Instruments Division, was recently made available for grain orientation studies. An X-ray Diffractometer and slit assembly allow specimens of .010 to .040-in. to be studied ▲ (71)

● Pre-built sectional belt conveyors in standardized, pre-engineered units with capacities up to 1,500-tons per hour are now available from the Link-Belt Company. They are constructed in 18-, 24-, 30-, and 36-in. belt widths, with 24- and 42-in. deep trusses. Drives range up to 40 hp. ▼ (72)



● Utilizing a 2¼ cu. yd. bucket, the No. 977 Traxcavator, newest and largest in the Caterpillar Tractor Company's line, is available with such features as a differential lever on each lift arm which makes possible 40 degrees bucket tipback, low cycle time, 24-volt direct electric starting and a 60 gal. fuel tank. ▼ (73)



200 to 400
TONS PER HOUR!

when it gives
Production like this—

IT'S A CEDARAPIDS COMMANDER

Wherever you see a portable aggregate plant producing 200, 300 or 400 tons per hour, day after day and month after month, with low, low operating costs — chances are it's a Cedarapids Commander!

The plant shown below, owned by P. O. Pederson of North Branch, Minnesota, is turning pit run gravel (with crushing 15% and up) into ¾" and 1" aggregate at a rate of 200 to 300 tons per hour. Other producers report as high as 400 tons per hour production!

The big, *balanced* production of crushers, horizontal screen and conveyors is the secret of the Commander's high tonnage output. Cedarapids-Quality construction is the secret of low maintenance and operating costs.

There's sure to be a Commander working near you. Watch it produce — ask the owner for his opinion — then call your Cedarapids distributor for additional information.

Cedarapids
Built by IOWA

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

ANNOUNCING . . .
THE NEW
ATHEY
PR-15

REAR DUMP TRAILER

BIG MONEY-SAVING ADVANTAGES in design of tractor-trailer team. Universal joint action of unit (1) eliminates racking and twisting stresses experienced by conventional trucks, (2) reduces dead weight by efficiency of frame design in absorbing road shocks, and (3) lessens loading shocks on prime mover.

SPEEDS TO 31.3 MPH provide high production at the lowest possible cost. More loads per hour, more material hauled per day.

15.6 CU. YDS. (22 TON) CAPACITY — matched design of the tractor and trailer assures top performance — utilizes full tractor capabilities.

FAST 12 SECOND DUMPING raises profit time — reduces waste time. Body raises 60° to dump any load quickly and surely. Spreading is easy with positive operator control of the dumping angle. High speed pump, flow control valve, and double-acting cylinders combine to give maximum efficiency.

CAT 186 HP DW15 TRACTOR furnishes the power — PR15 and Cat No. 15 Scraper can be interchanged quickly in the field. Allows full performance of two machines with one prime-mover, and obviates the need for two complete units — one for self-loaded material and one for shovel-loaded material.

TIRES ON TRACTOR & TRAILER are interchangeable. Trailer tires, wheels and brake drums are also interchangeable with No. 15 Scraper for even greater economy.

HYDRAULICALLY-CONTROLLED THROUGHOUT — positive, sure. One lever for dumping. No downtime for costly, time-consuming cable replacement.

EXCELLENT WEIGHT DISTRIBUTION with 37% on the tractor drive wheels. Traction assured in the toughest footing with big 21.00-25, 24 ply rock-type tires on the trailer and tractor drive wheels.

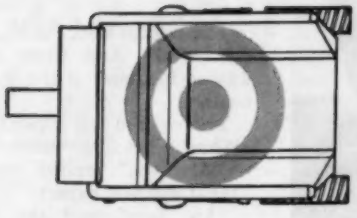
RUGGED AND DEPENDABLE, made of premium quality steels for greater resistance to impact, corrosion and abrasion with a minimum of dead weight. More payload every trip — more profit every ton hauled.

The PR15-DW15 team is designed for high production at the lowest cost. It has many advantages over other types of hauling units. A big, clean body and low loading permit a 14% increase in shovel efficiency. A low center of gravity permits maximum speeds on the haul and around tight turns. Safety is built in with big powerful brakes, positive operator control on the edge of the fill, and independent braking of tractor drive and trailer wheels. Handling is easy and sure.

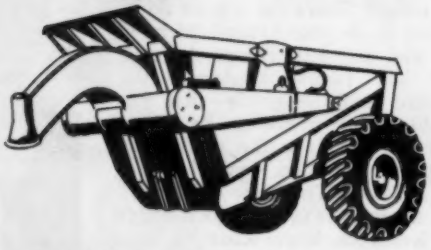
All these features mean more profit on every job where the PR15-DW15 team is working — loading more, rolling faster, dumping quicker. Your Athey-Caterpillar Dealer has all the facts. Find out how you can save money on your hauling with the new PR15.

PROFIT-PACKED FEATURES ASSURE PEAK PERFORMANCE

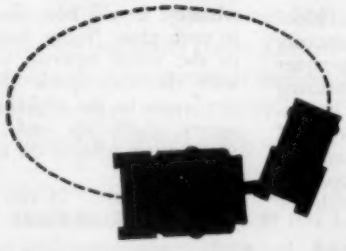
FAST, POSITIVE DUMPING with complete, hydraulic control. Dump is completed in 12 seconds. Material discharges quickly and easily from wide smooth interior. Spreading is simple, too.



BIG BULL'S-EYE TARGET . . . easy to hit. Body opening is 12'7" x 8' for efficient shovel loading. Loading height is only 8' 1¾" above ground line for faster shovel swings — faster loading. Spotting the unit is quick — no waste time in unnecessary maneuvering.



BUILT TO TAKE IT . . . The PR15 is rugged. Easily withstands the loading impact of big, hard rock. Special steels minimize abrasion, corrosion, and wear. All welded construction absorbs stresses and torque.



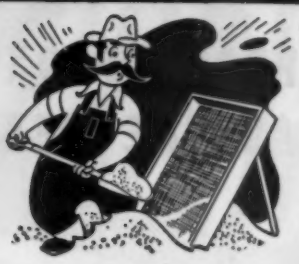
NON-STOP TURNS IN 37'. Eliminate high cost, time-consuming maneuvering, keeps cycle on a fast, profitable basis.

FLOTATION AND TRACTION of unit are outstanding. Excellent weight distribution on big tires provides traction in adverse footing and balance on steep grades. 37% of entire weight of loaded unit is on big drive wheels of tractor.

ATHEY PRODUCTS CORPORATION

5631 West 65th Street, Chicago 38, Illinois

Screenings



by Ray L. Smith, Jr.

NOW and then you get a letter so gay, droll, or interesting, that you show it to others. You say, "Isn't he a character?" Or, "I know this chap, and he is exactly like he writes." If you get something new from him, you reach to read it first of all the letters on your desk. Then you sadly shake your head and say, "I wish I could write a letter like that." Why can't you?

The secret is no longer a secret. Why not just forget that you are writing a letter, and *talk* to the reader instead? That's the way to do it, believe us. Be your natural, friendly, free and easy self. Forego the canned and formal language — the whiskers and the goozle—that you would not use in speech. Be not as cold and lifeless as the stuffed fish hanging in your den. Again, *be yourself and talk.* That's the only secret that the masters use; the good letters are *inevitable.* Yours would be, too.

Fruit Juice Concrete

NEWS item released in England, tells us about the experimental use of seaweed, sunflower seeds, and fruit juices as building materials for house foundations.

Inventor and patentee claims these ingredients make earth as hard as concrete and cost much less. Organic matter is *killed* and, after mixing, the soil is rolled and surfaced with Macadam. Method is to be used for a housing project in the United Kingdom.

Tombstone 'Tip'

WAITRESS Lottie Gillis, out in Van Nuys, Calif., has received her biggest tip but concedes it was a grave error.

A group of youths wearing jackets enscribed "Valley Cats" trooped into the cafe where Mrs. Gillis works. When they departed, they left a 200-pound tombstone.

The marble slab bore the inscription: "Peter F. Fagan, died Jan 24, 1906, age 49."

Zonolite Girl

THE ZONOLITE Co. has solved the problem of keeping their 100-odd salesmen happy. Recently at a three day sales clinic the men heard predictions for continued growth of the entire construction industry and

record sales of vermiculite in 1956.

The representatives momentarily forgot their appetites at the banquet when one of Zonolite's advertising posters came to life. Dressed in diapers to symbolize "baby new year" and new opportunities for Zonolite, curvaceous Donna Kime appeared holding a sales poster for which she posed.

Vermiculite is widely used in building for insulating and fireproofing, but, it sure beats us how they can expect anything to keep the temperature down with Donna hanging around in *that* get-up.

A reporter was told to cut his stories to bare essentials. His next story read:

"Q. Johnstone looked up the elevator shaft to see if the car was coming down. It was. Age 52."

A Colonel in Guadacanal wanted a Jap prisoner so he turned to a big hulking colored soldier and said: "Big Boy, go out and get me a Jap prisoner and I will let you have my jeep for twenty-four hours. You can ride 'er, play with 'er or do anything you want with 'er.

The colored lad replied, "O.K., boss," and disappeared in the jungle.

'Bout an hour later, he came steaming back dragging a badly frightened Jap soldier by the ears. He pitched the prisoner at the Coionel's feet and said, "There you are, boss."

The colonel said, "O.K., splendid! Fast work! And there you are," waving his hand at the jeep parked nearby.

The colored boy looked and said, "What! That little ottermobile?"

"Why yes," replied the Colonel, "What did you expect?"

"Aw, boss" said the negro, "I thought a jeep was a female Jap."

"And in conclusion, my dear students, I shall give you a demonstration of the evils of the Demon, Rum. I have here two glasses, one filled with water, the other filled with whiskey. I will now place a worm in each glass. Notice how the worm in the water squirms and vibrates with the very spark of life, while the worm in the whiskey writhes in agony, curls up and dies. Now, young man, what is the moral of this story?"

Young man: "If you don't want worms, drink whiskey."

A surgeon, an architect, and a politician were arguing as to whose profession was the oldest.

Said the surgeon: "Eve was made from Adam's rib, and that surely was a surgical operation."

"Maybe" said the architect, "but prior to that, order was created out of chaos, and that was an architectural job."

"But," interrupted the politician, "somebody created the chaos first!"

UNCERTAIN OPERATING COSTS BOTHER YOU?

depend on the only

long range economy fuel

You'll win in the long run by burning Bituminous! Today and tomorrow, supply is unlimited and the vast reserves are right on the threshold of the major manufacturing centers. Bituminous, too, has the highest potential for cost improvement among competing industrial fuels. Year in and year out new methods and machines are designed to control costs and improve burning efficiency.

Let B&O's Technical Service fit this fuel to your long range power plans.
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BITUMINOUS COALS FOR EVERY PURPOSE

The bonus in the bucket

Watch this demonstration of the MICHIGAN Bonus

1. 300% Torque Multiplication

Watch the powerful crowding action —forcing the bucket into the pile. The Clark Torque Converter provides that smooth, shockless power—as resistance increases, you get more torque automatically—*up to 300 per cent.*

2. Terrific Break-Out Power

Get the bucket-blade into hard-to-dig material, or under a heavy obstacle, and loosen it by "working the bucket" —the two double-acting hydraulic cylinders are actually powerful enough to pull the back wheels off the ground.

3. Low Level Bucket Action

At a height of only 3 feet, you can tip the bucket back with a full load. Low-level bucket action is independent of boom hoist. You can travel a full load at low-level—with excellent visibility and stability, and you *won't* spill the load.

pays for this machine fast!

Capacity is strictly a matter of how much you can pick up in the bucket — NOT how much is printed on a specification sheet.

Take a close look at the bucket in the photograph. It shows a typical MICHIGAN bucket load, heaped-up well over the 1⅝ yard *rated capacity* of this Model 125A. There's at least a 50% bonus in the bucket—and that's a major reason why a MICHIGAN pays for itself fast.

You simply move more with a MICHIGAN! For example, on a 10-hour shift, at a rate of 40 loads per hour, that 50% bonus can add up to *325 extra yards per day!* How long do you think it will take this kind of bonus yardage to pay for a MICHIGAN? We guarantee it won't take long.

Two outstanding features combine to give you bonus yardage on a MICHIGAN. The Clark-built power train, with torque converter and power-shift transmission, gives you more cycles per hour; MICHIGAN bucket action puts more material in each bucket load. For a demonstration, on your own job, if you wish, call your local MICHIGAN distributor, or write or call us direct. And ask for details on the low cost MICHIGAN Lease Plan.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
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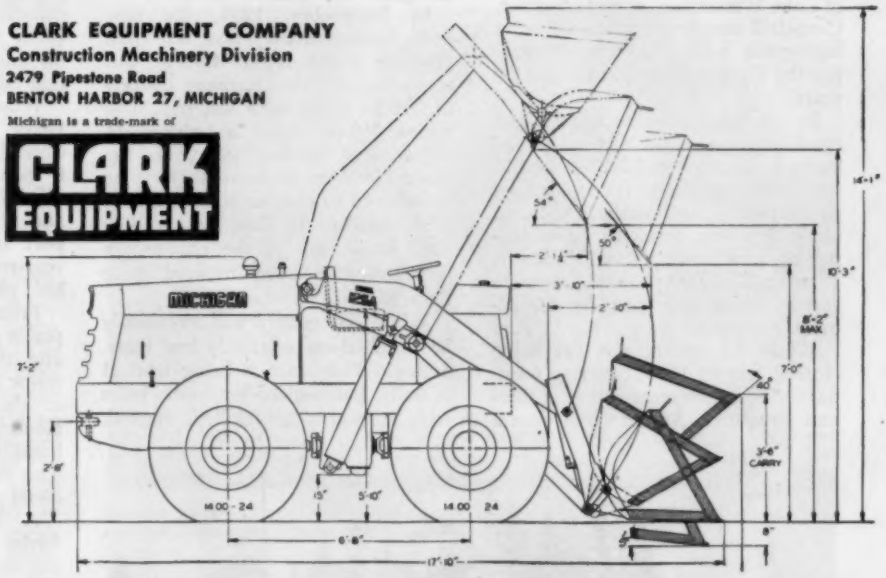


Multi-position Bucket Action: note the shaded area of this Model 125A range chart. From 8 inches below ground-level, two big double-acting bucket cylinders pull the bucket back to a 40-degree carrying position at a height of only 3½ feet. The operator has precision control over this independent bucket action.

Bucket

4. Full Power at the Bucket

Step on the brake and automatically put the transmission in neutral—the full hydraulic power goes into the bucket cylinders. Accelerate for faster bucket action and this automatic neutral takes the load off the brakes and torque converter.

5. Look—No Clutch!

Watch the driver *change direction while moving*—by flipping the easy hand-lever on the steering column. There's no clutch pedal on a MICHIGAN—the torque converter and power-shift transmission takes all the work out of gear-shifting.

6. Easy to Drive

Operate the boom and bucket controls with the right hand and spin the steering wheel effortlessly with the left—hydraulic power does the muscle work.

Northwestern Portland Cement Opens Second Quarry

truck and rail transport used in 60-mile haul

By HARRY F. UTLEY

Another ON THE SPOT Report

FOR more than a quarter century, the twin aerial tramways which carried limestone from the sky-high quarries to the plant of the Northwestern Portland Cement Company at Grotto, Wash., have been a familiar landmark to travelers along the Stevens Pass Highway through the Cascade Mountains.

With the depletion of the deposit, the moving ropeways and the marching buckets are now gone and the company is getting its limestone from a deposit nearly 60 miles away by rail and highway. The location and establishment of the new quarry followed a lengthy program of geophysical study and exploratory drilling which finally pin-pointed the desired deposit in a primitive mountain region 10 miles above the head of Lake Wenatchee, at Soda Springs. Core-drill samples revealed sufficient high-grade white limestone to supply the Grotto plant for at least 50 years.

In planning its new quarry and crushing plant, the first order of business was to establish accessibility. This involved the widening, straightening, and surfacing of an old U.S. Forest Service road to permit trucking in the heavy machinery. It was a $100,000 project, the entire cost of which was borne by the cement company.

While the quarry site was being cleared late in 1953, concrete foundations were poured for the crushers and structures. At the same time a new receiving and storage system was built at the Grotto plant, involving the erection of a railroad spur, a trackhopper, and the installation of car-shakers, feeders, and conveyors to stockpile the stone alongside the cement plant.

In September, 1954, the new Soda Springs quarry and 125-t.p.h. crushing plant began turning out material, and the tramway buckets at Grotto made their last trip. The minus 1½-in. stone is trucked 21 miles to a loading point on the Great Northern Railway, there to be transferred to cars for the remainder of the haul to the Grotto plant. The total investment in the changeover is reported to have involved more than $350,000.

While the quarry will eventually be benched on relatively low faces, a single 80-ft. face is being worked initially. Large-diameter coyote holes with cross-cuts are drilled, opened, and loaded with about 20 tons of Nitramon to bring down about 125,000 tons of stone per blast, enough to keep the crushing plant busy for three months or so. Although a great deal of secondary shooting is required under this program, the situation should be corrected later when the low benches are opened up and drilled and blasted to obtain better fragmentation.

Winter and the accompanying heavy snowfall comes early to the Cascades, limiting operation to 7 or 8 months out of the year. During this short operating season the quarry and plant must produce and transport sufficient stone to supply the year-round needs of the 600,000-bbl. plant at Grotto.

From quarry floor to plant hopper is a haul of only about 450 ft., and the stone, loaded by a Manitowoc Model 3000 1¾-cu. yd. crawler shovel, is transported by two Koehring W-55 Dumptors, each handling about 7 tons per carry. The shovel is powered by a Hercules diesel engine.

A Traylor 3- by 10-ft. apron feeder beneath the hopper transfers the stone over a grizzly spaced at 4 in. to a Pioneer 30- by 42-in. primary jaw crusher. The crusher, driven by a G-E 125-hp. motor, brings the top size down to 4 in. It is then carried by a 30-in. by 130-ft. American Rubber belt conveyor to a 5- by 12-ft. Robins Gyrex double-deck screen ahead of a Pennsylvania Impactor mill.

All plus 1½-in. stone scalped off at the screen goes to the hammermill. The minus 1½-in. screen throughs and mill product undersize are finished product, mill oversize returning in closed circuit by way of a return conveyor. The finished stone is lifted 62 ft. by a chain-bucket elevator to feed a 20-in. by 80-ft. stacker conveyor carrying B. F. Goodrich belting. This conveyor builds the surge pile, which has a capacity of 1,550 tons.

All main conveyors and crushing and screening equipment are enclosed. The primary crusher building is at the left; the secondary crusher and screen are housed in the building adjacent to the elevator (right).

A belt-conveyor recovery tunnel beneath the pile delivers the stone for truck-loading into a 4-compartment hopper over the 50-ton, 60-ft. Fairbanks-Morse platform scale. An interesting feature is the automatic control for the two feed gates in the tunnel and the drive motor on the reclaiming conveyor, which stop and start by means of Bindicators installed on the truck-loading hopper. This arrangement keeps the hoppers constantly filled and ready to load the truck-trailers without delay.

The semi-trailers are of streamlined torpedo design for strength and low center of gravity; they were built by the Clough Equipment Company of Seattle, and they have Kenworth front ends. There are four of these units in service, each hauling 21 tons per trip and making the 42-mile round trip to and from the rail-loading station in about 90 min.

These trailers are bottom-dumped by air-ram gates. The regular daily transport schedule calls for 52 trailer loads spread over two shifts during the short operating season, or between 1,000 and 1,100 tons per day. A daily train of 15 to 20 hopper-bottom 63-ton capacity rail cars makes the final delivery of the stone to the plant at Grotto.

Except for the mobile equipment, all prime movers at the plant are individual electric motors, power being generated at the plant. The main generating equipment consists of a GM 8-cylinder diesel engine direct-connected to a Westinghouse 400-kv.-a., 440-v. alternator housed in a separate building. Most of the workers—there are usually 18 or 20—are quartered in a dormitory on the premises and eat their meals in the company-owned dining room.

Jim Halloran is the quarry and crushing-plant superintendent. Frank Baldwin, a veteran with the company, supervises the operations at the Grotto plant, a single-kiln operation capable of manufacturing, besides standard portland, high-early-strength, low-alkali, and masonry grades. Gordon Tongue, president, has his headquarters in the company's main offices in Seattle. The concern was organized in 1926 by C. T. W. Hollister, grand old man of the cement industry in the Pacific Northwest, who is chairman of the company's executive committee.

Operations at the Grotto plant and original tramway-served quarry began in 1928.

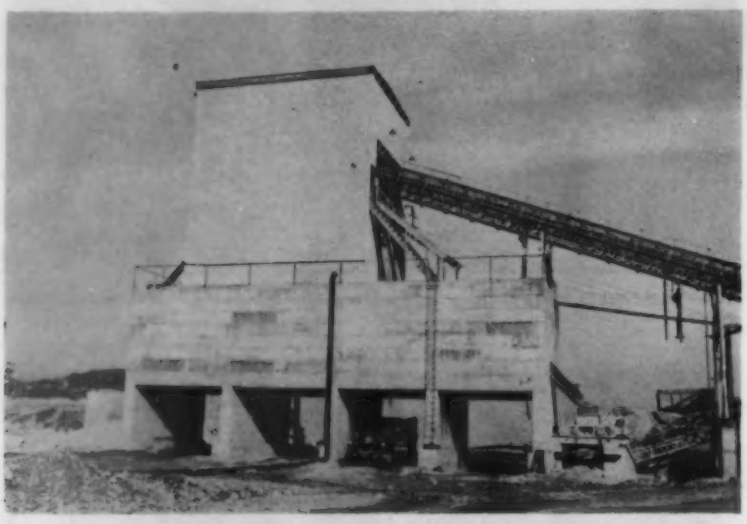
A view in the quarry of the Northwestern Portland Cement Company at Soda Springs, Wash., showing plant installations in the background.

Towering Douglas firs form a background for this view of the secondary crushing building and the stacker, which builds the surge pile of minus 1½-in. stone.

A semi-trailer being loaded in the scale house by automatically-controlled bins.

Canadian Producer Builds Modern 2,000-T.P.D. Plant

new structure houses improved processing



Finished materials are stored in nine compartments above these truck driveways at the Preston Sand and Gravel Company's plant. Processing equipment is housed in the superstructure.

Another ON THE SPOT Report

By BUREN C. HEROD

THERE has been a sand and gravel operation on the northern edge of Preston, Ontario, about 25 miles west of Hamilton, for many years—one that had been accustomed to a leisurely production pace of about 150 t.p.d. That situation has undergone a radical change, however, and replacing an old low-capacity setup in a wooden plant building is a new and modern processing operation housed in a $200,000 concrete-and-steel structure. With a daily capacity in excess of 2,000 tons, the present Preston Sand and Gravel Company, owned and operated by Tom J. McGovern, is serving an area from Windsor on the west to Toronto on the east—over 500 square miles.

The descriptions of many new enterprises would be incomplete without the background of the men whose efforts they represent. This would be particularly true in the case of the Preston operation and Tom McGovern a big, young Irishman, who has become even more widely known in this part of Canada for his aggressiveness and capacity for hard work since becoming a sand and gravel producer. His previous occupation was that of a salesman—reportedly a very successful one—of heavy equipment and power shovels.

It was while following this line that he became familiar with the former operation at Preston. He envisioned great possibilities for the location, with an improved and expanded plant; and the soundness of the idea is attested to by the demand, which is now being met by the new 500,000-ton-per-year operation. Possessing not only the ability to recognize an excellent opportunity, but also a willingness to get his hands dirty in bringing it to fruition, he himself took a physical part in constructing the new facilities.

The present efficient operation was not, however, an overnight development. Shortly after Mr. McGovern

A view of the new Preston plant showing the top of the feed hopper, right, the primary crusher and screen, center, and the two parallel crushed stone and round gravel belt conveyors.

took over the property six years ago, he made his first move toward expansion. With new crushers and screens installed in the old wooden plant—located in the western part of the 75-acre tract—he was able to increase production to about 60 t.p.h., or about four times the previous rate. Operations were then continued with the revised older facilities until a year ago.

By the fall of 1953 Mr. McGovern was in a position to start construction of a new plant, for which he had developed a design. Although not an engineer, he was nevertheless only too familiar with the bad features of the old plant—one of which was based on the inability to separate round and crushed gravel before or after screening—and he laid his plans accordingly. The site chosen for erection of the new structure is centrally located in the property.

On five footings 3 ft. wide and 30 ft. long, piers 2 ft. thick were poured to a height of 9 ft. Piers and footings are separated by two 16-ft. and two 18-ft. spaces. These piers support the monolithic concrete 8-compartment bin area of the lower plant structure which, with 17-ft. high side walls, is 30 ft. wide by 70 ft. in length. In the concrete work 37 tons of reinforcing bars were used. Steel plate partitions were installed in dividing the storage area into eight main compartments—four of 140-cu. yd., three of about 160-cu. yd., and one with two sections of 80-cu. yd. capacity each. The four spaces below these bins and between the piers are utilized as driveways for truck loading.

For the balance of the plant construction, a contract was let to the export division of the Rogers Iron

In this pit view, the gradation of material from finer sizes at the top to coarser below can be seen on the fresh face at the left.

A reciprocating plate feeder below this 25-cu. yd. truck hopper transfers the raw feed to the belt on the left that discharges over the primary screen.

Feed discharged from the hopper conveyor, right, is separated on the screen, center. Oversize from both decks is reduced by the primary crusher, foreground.

In this view toward the hopper from the top of the plant, the crushed stone belt is on the right, round gravel belt on the left. The return conveyor from the secondary crusher rises between the main belts.

Works Company. Detail design work was done by that company around the basic plan devised by Mr. McGovern, who also relied to a great extent on screen data furnished by the Screen Equipment Company.

Under supervision of the Rogers company engineers, the Preston plant crew erected a steel framework with siding and roofing to a height of 35 ft. above the concrete bins. This superstructure supports and houses the screening and classifying equipment, which was also installed by the local crew. They were aided in final hookup and adjustment by the contractor's personnel.

The feeder installed below the plant feed hopper, plus all conveying and crushing equipment, are products of Rogers Iron Works, who also furnished screens made by the Screen Equipment Company. The latter units are all fitted with screencloth manufactured by the Greening Wire Company. Electric service to the plant is stepped down from 2200 v. on the main power line to 550-v., 3-phase, 60-cycle current in supplying the Reliance motors used throughout. Equipment drives are furnished by Gates V-belting or Dodge torque arm reducers. By March 15 of last year construction and equipment installation were complete and the new operation was ready to roll.

The workable depth of the deposit on the property has averaged about 40 ft. and shows a consistent normal gradation from finer material at the top through increasingly coarser material toward the bottom. Only a small percentage of the gravel excavated is over 4 in. Some difficulty was encountered in earlier digging due to a layer of "hardpan" that has an easterly dip through the tract and as a natural barrier held considerable water above the normal water table. However, after this layer had been pentrated and removed over a larger area, there was no longer any trouble with excessive water in the pit.

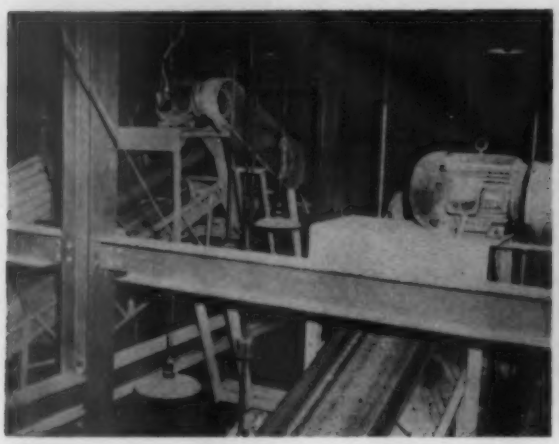
Five haulage trucks of varying capacities, loaded at the working face by a ¾-cu. yd. diesel shovel, transport over 200 t.p.h. of material to the plant. At the top of a truck-ramp the plant feed is dumped into a 25-cu. yd. hopper. Although there is no surge provision at present, it is planned to provide one adjacent to the hopper in the near future.

A heavy-duty 30- by 72-in. reciprocating plate feeder below the hopper transfers the raw feed to a 36-in. belt conveyor driven by a 10-hp. motor. The material is then transported 45 ft. on an 18-degree rise to a 4- by 12-ft. double-deck screen. A 2-in. opening perforated plate is

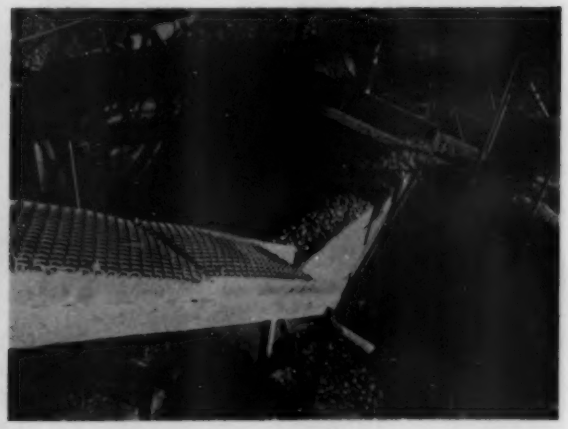
(*Continued on page* 102)

The crushed stone belt discharges on the dust screen, center background, from which this material is fed to no. 2 screen, lower left. Round gravel is discharged at the right on the no. 3 screen, lower right.

Wash water from both screens and the minus ¼-in. material from no. 3 screen is fed to this 16-ft. water scalping tank.

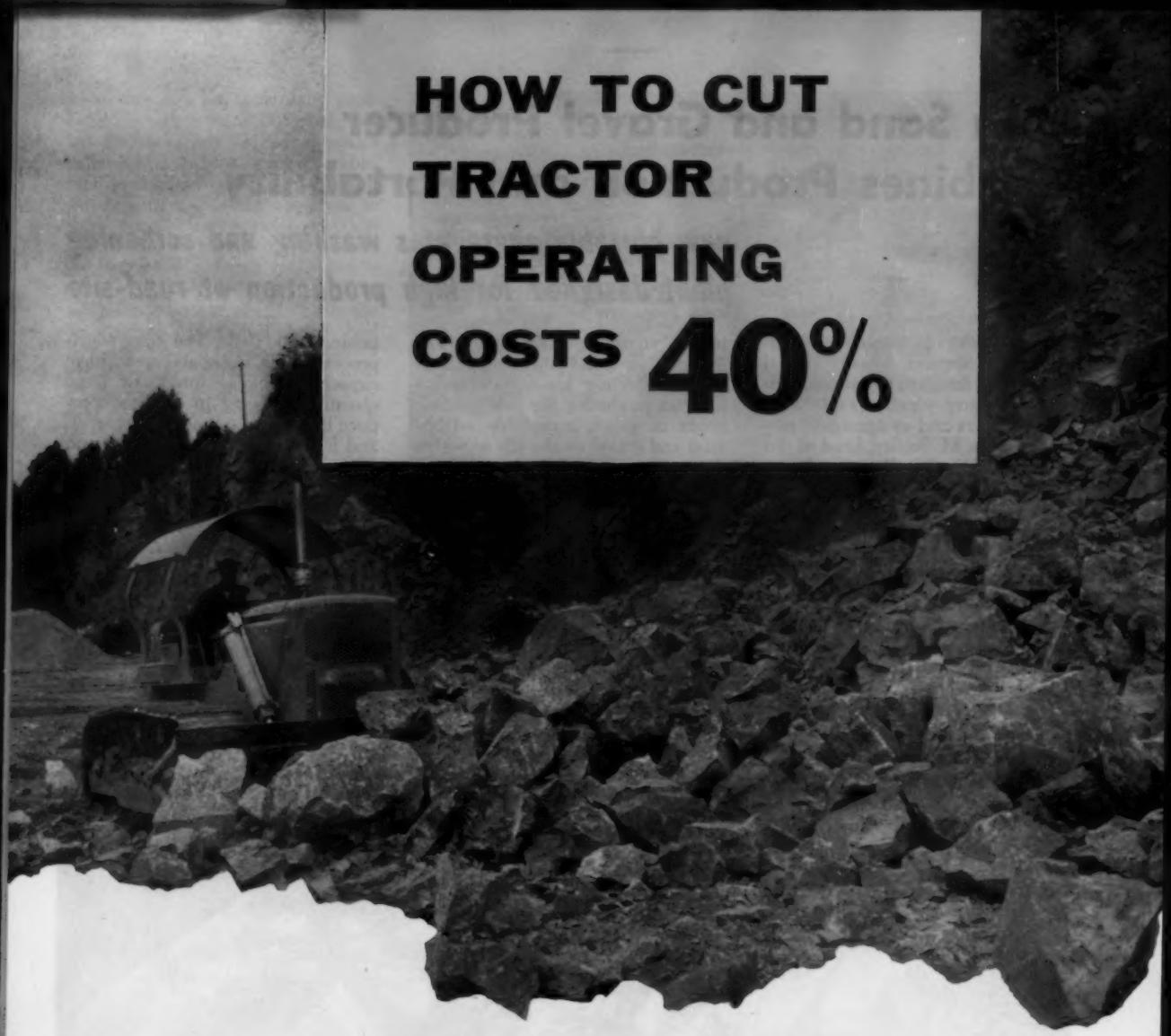


These two sand classifiers are supplied from the scalping tank above. Concrete sand and mason sand are produced in these two units



Plus 1-in. crushed stone from no. 2 screen and plus 1-in. round gravel from no. 3 screen are stored in these two bins from which they may be chuted to the secondary, double roll, crusher.

HOW TO CUT TRACTOR OPERATING COSTS 40%



THIS new Caterpillar D7 Tractor (Series C) replaces another D7, veteran of 14 years of tractor-busting work in the quarry of Olympic Portland Cement Co. at Limestone, Wash. The old D7 it replaces cost a total of $29,669.31 for all running expenses, upkeep and repair during 14 years on the job. This is three times its original cost. According to Joe Ristine, Quarry Superintendent, the usual figure in this rough work is five times original cost. A clear saving in this case of 40%!

With its No. 7A Bulldozer, Olympic's new D7 clears shot rock from the quarry floor, cleans up around the shovel, and maintains haul roads. Rugged work—but this new CAT* Diesel Tractor is designed to handle even *more* jobs at even *lower* cost than its sturdy predecessor. Its heavy-duty diesel engine develops 128 HP for bigger, more profitable loads. The injection system delivers full, foul-free power on money-saving No. 2 furnace oil.

This new tractor is available with an oil clutch for longer life and greatly increased periods between clutch adjustments. Track shoes are now hardened by a new "water quench" process to stand up under severe quarrying conditions. Hydraulically boosted steering and new starting engine with easy single-lever control are popular with operators.

The new D7 is available with straight or angle blade, with hydraulic or cable control. Your Caterpillar Dealer will be glad to arrange an on-the-job demonstration of the D7 or other Caterpillar Diesel Tractor that will work most, last longest and cost least on *your* job. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

Iowa Sand and Gravel Producer Combines Production and Portability

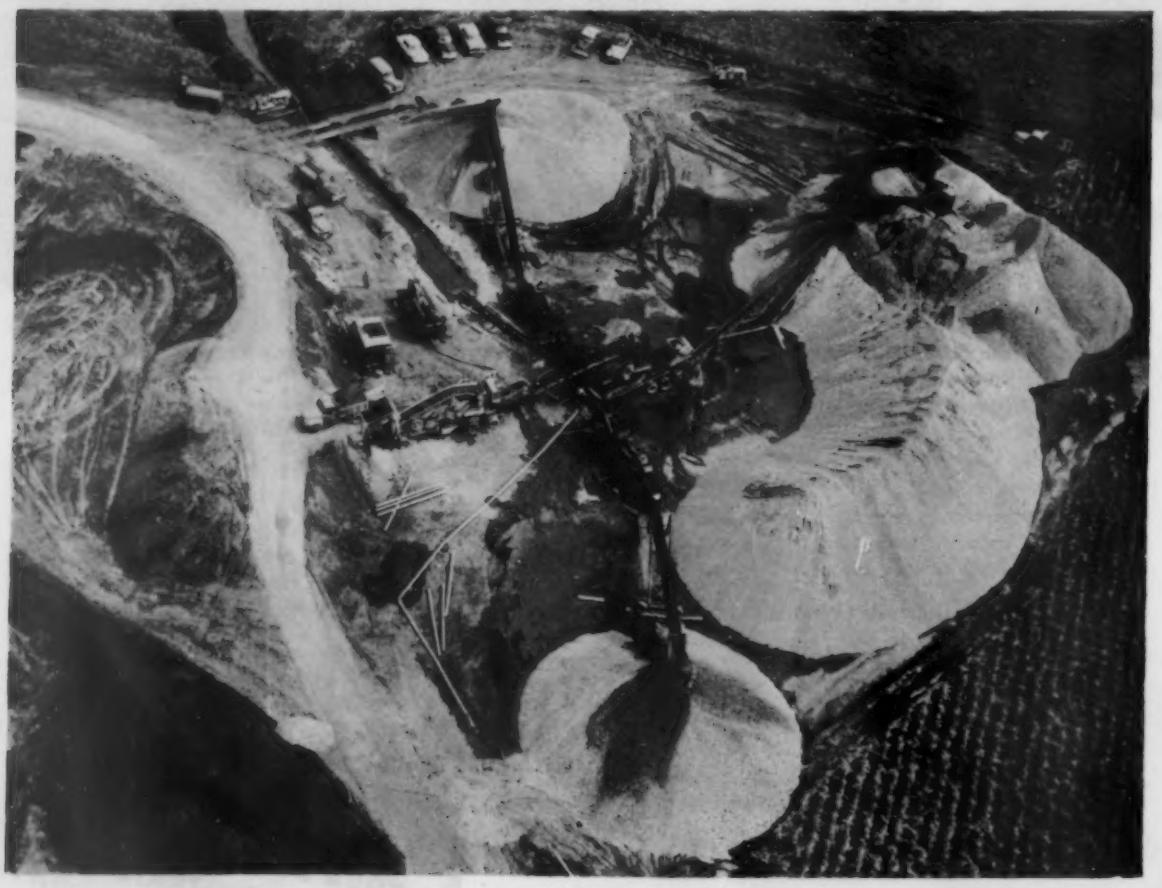
new portable aggregates washing and screening plant designed for high production at road-site

THE Stolley Construction Company of Spencer, Iowa, is typical of many concerns in various parts of the country which operate both as contractors and as aggregate producers. John M. Stolley, head of this concern, was originally a road contractor who produced his own aggregates with a portable plant. Recently, however, he has been operating primarily as a subcontractor, producing specification sand and gravel in contract quantities for concrete paving contractors and for operators of ready-mixed concrete plants. He also operates as a producer in his own right, selling material to anyone having need for his product. In choosing his equipment, Mr. Stolley had to keep in mind three important factors affecting his overall operations in producing the best possible grade of clean, acceptable washed sand and gravel on the job or within an economical haul distance of it.

First, and basically, is the nature of the native material with which he has to work. Although the rich Iowa soil is somewhat more noted for producing hog-fattening corn than road-building gravel, there is a goodly number of available deposits. However, these deposits more often than not are richer by far with sand than they are with gravel, and the gravel itself is often heavily contaminated by shale. The plant which processes this material has to have capacity to handle unusually large quantities of sand in order to produce the desired quantities of gravel; and it has to remove the shale and other deleterious material.

The second factor is the importance of prospecting a pit. It is often said, with lamentable truth, that one never really knows the exact nature of the material in any given pit. To be sure, there are ways of prospecting, such as core-drilling (considered rather ineffective for a deposit below the water table) or opening inspection holes with the clam or orange-peel bucket. But the real proof comes

An aerial view of the Stolley plant in operation near Spencer, Iowa. The large amount of sand in the stockpile, as compared to the two smaller gravel piles, is indicative of the type of material available in that area.



when the material is actually processed through a plant and stockpiled for the inspector's test. Mr. Stolley's belief is that use of a highly portable, high-producing washing plant which can be moved in readily and put to work quickly is the most practical and economical way to learn what the deposit in question really has to offer.

The question of portability is the third factor. Mr. Stolley already had on hand a portable crushing plant—a Cedarapids Junior Tandem, with a 1036 jaw, a 2416 roll, and a 2½-deck vibrating screen—with which to feed a washing and screening plant. He also had an American Hoist and Derrick 1-cu. yd. dragline and a half-dozen trucks with which to feed directly into the hopper of the crushing plant.

He rounded out his operation by adding a new Pioneer Model 512-VW portable washing and screening plant. This setup gives him the production he wants, and it is easily moved. All units are mounted on rubber tires and can be towed by truck or semi; all units can be transported within the pit with virtually no dismantling. It was found that the entire plant could be moved into location, set up, and be in operation in a matter of about two days.

Mr. Stolley began operating his new plant at Spencer, Iowa, headquarters of his firm, where he stockpiled an initial order of 25,000 cu. yd. of sand and gravel for ready-mix and concrete block producers. Then he packed up and moved to a new location and opened a pit 8 miles south of Clarion, Iowa. After completing an order for 25,000 cu. yd. of aggregate for the Kist Ready-Mix Company, of Eagle Grove, Iowa, he went back to Spencer to stockpile another 20,000 cu. yd. to fill additional orders which had meantime come in for his washed sand and gravel. Later he is planning to move up to southern Minnesota for a job and is looking forward to hopping around to a half-dozen Iowa locations, beginning early in 1956.

Material flow is from the crushing plant (upper left) to the portable screening and washing plant (center), where separation takes place. Concrete stone comes to the lower left, pea gravel to the upper right, and sand to the right.

The central unit of this new washing plant consists of the following: a 30-in. by 35-ft. plant-mounted feeder conveyor; a "bang-board"-type slush box where the water is added; a 5- by 12-ft. three-deck vibrating screen with secondary spring suspension to eliminate transfer of vibration to the plant proper; a 30-in. by 25-ft. Eagle double-screw fine material waterer; and two side delivery conveyors, 18-in. by 25-ft. and 36-in. by 25-ft., which may be attached one on each side or both on either side of the plant.

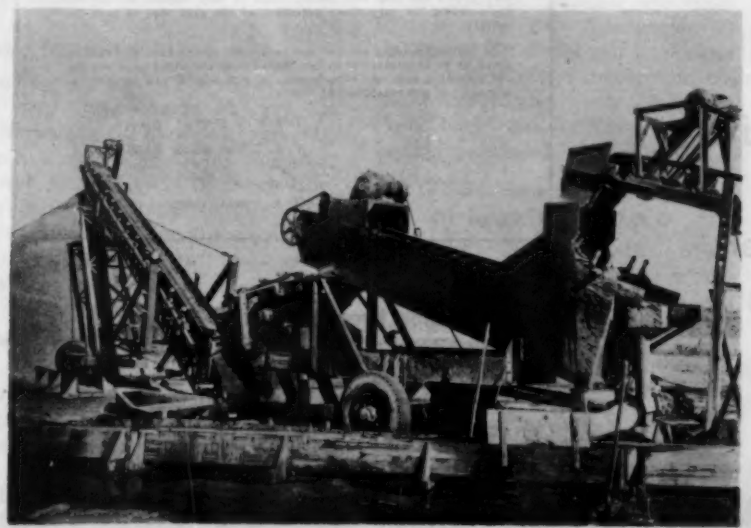
In addition, the Stolley plant has two coarse-material units each having an Eagle 24-in. by 15-ft. screw, a 3- by 6-ft. single-deck buzzer screen, and three portable conveyors delivering from the three de-watering units to ground stockpiles. (These additional pieces of equipment are offered as optional by the manufacturer to fit the basic plant to specific field conditions.

Mr. Stolley chose to use both coarse screw dewaterers for "upgrading" the product because of the high percentage of shale and soft stone prevalent in this part of the country. As a result, his superintendent, Pete McAllister, Emmetsburg, Iowa, reported that although the Clarion pit ran a very heavy proportion of shale, the new plant did a wonderful job of removing it.

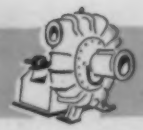
Material is fed from the delivery conveyor of the crushing plant to the on-the-plant feeder conveyor which carries it to the top deck of the three-deck gradation screen, where water is applied from spray bars. Material retained on the top deck is carried by a spout to a ground pile at the front of the plant; or a conveyor might be added to move the over-size away from the plant or to recycle it back to the crushing plant.

Gravel retained on the second deck is passed by spout and a 36-in. side delivery picking conveyor to one of the two coarse-material dewatering units. Sand and gravel passing the

(*Continued on page* 72)



Pea gravel being stockpiled after passing through the coarse-material dewaterer (attached to the left side of the plant), as viewed from the feed end. The unit consist of a 24-in. by 15-ft. screw and a 3- by 6-ft. buzzer screen.



Another Customer Speaks

FROM KANSAS HERE'S MORE PROOF THAT

You can not buy, at any price, a more durable pump for sand and gravel than a Thomas—you can not buy another pump that will make you as much money.

J. E. STEELE
Sand and Gravel
PHONE 2-5741 1600 N. HALSTEAD
HUTCHINSON, KANSAS

Sept. 6th 1955.

Thomas Foundries, Inc.
P.O. Box 1111
Birmingham 1, Alabama

Gentlemen:

Since installing a Series FL Thomas DURABLE Dredge Pump, 6" discharge, early in 1954, we have operated continually without any breakdowns or delays and down time for repairs. We have also shown an exceptional increase in our production with the Thomas Pump.

Before we purchased the Thomas Pump, we were down for repairs and repalcement parts every three or four months. Now, at the end of 18 months operation with your pump, we have replaced the impeller, liners and some seal parts. This is very unusual service when you consider the very sharp qualities of the sand that we have in our pit.

The engineering service and technical advice that you have given us in connection with our Thomas Pump and other problems in our operation have been very beneficial and helpful and we wish to express our appreciation and thanks.

Very truly yours,

J. E. STEELE SAND & GRAVEL

J. E. Steele, Owner

- **Increases production.**
- **Eliminates breakdowns.**
- **Wearing parts last 4 to 6 times longer.**
- **Operation backed up by factory advice and technical help.**

THOMAS FOUNDRIES, *Inc.*

P. O. BOX 1111 . . . . BIRMINGHAM, ALABAMA

New "B" Rear-Dump offers you big capacity PLUS

High speed

B Tournapull Rear-Dump has forward speeds from 2 to 34 mph, plus two reverse speeds, 2 and 4 mph. Wide selection of speeds enable "B" to climb steep grades.

Easy loading

Loading of new "B" is made easier by large "target" area of bowl. Its 17′8″ length, 10′2″ width, and 7′6″ depth make it ideal for any size shovel. Rear of body provides wide, low entry for dipper to give extra speed advantage for the excavator. Big 35-ton capacity can make every load a profitable one.

Fast dumping

At the touch of a dashboard switch, body raises to vertical position. Edge of bowl swings behind and below rear wheels so rocks cannot roll forward to lodge against wheels nor can material pile under rear end.

180° turn in 35′ space

Two wheel prime-mover turns 90° right or left . . . machine in normal use makes non-stop 180° turn in space only 35′ wide. With body in dump position, machine can turn 180° in only 27′. This maneuverability of "B" allows you to work in tight quarters where smaller conventional haulers often cannot go. Jockeying back and forth to get into loading position is eliminated.

7536 square inches of braking surface

Heavy-duty air brakes with 7536 sq. in. of braking surface improve maneuverability . . . add to operator confidence for faster operation on steep grades and narrow winding haul roads.

New "B" also offers these additional features

- Big 7-ft. high 2-ft. wide low pressure tires for better flotation.
- Rugged body construction for longer equipment life.
- Simple, positive electric controls for fast, easy operating.
- Lower maintenance because there are no hydraulics, no long driveshafts, no springs or spring hangers.

For more information on this big new "B" Rear-Dump see your LeTourneau-Westinghouse Distributor.

Tournapull — Trademark Reg. U. S. Pat. Off. SR-888-G-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

REVIEW and FORECAST Of the Canadian Cement Industry

CANADIAN OUTPUT SETS ANOTHER RECORD

By WALTER E. TRAUFFER

THE Canadian portland cement industry in 1955 set another all-time record in both production and shipments and it seems likely to repeat the performance in 1956. Plant expansions and new plant construction are rapidly increasing the industry's capacity to meet the expected continuing increase in demand.

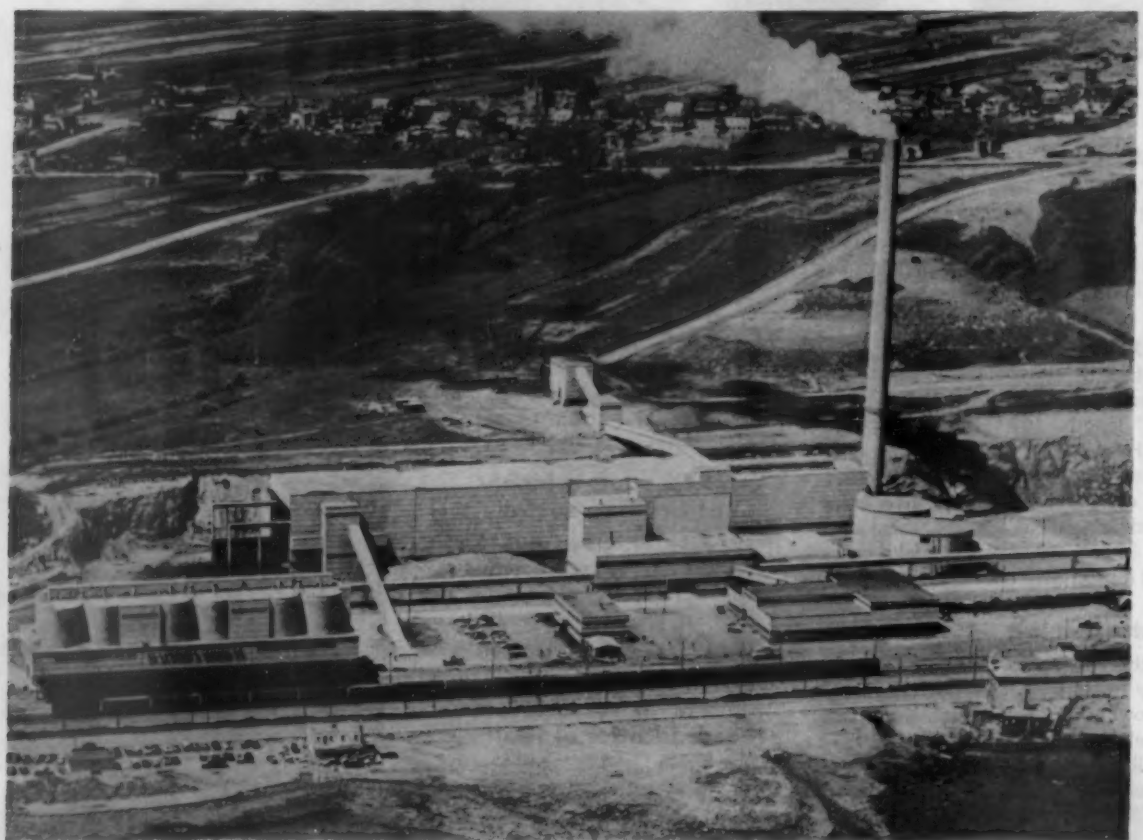
Official government figures are available only through October, 1955. These show that production for the first 10 months of the year reached 21,377,671 bbl. (Canadian 350 lb.), an increase of about 12 percent over the 18,993,873 bbl. produced in the same period of 1954. Shipments through October of 1955 totaled 22,208,326 bbl., an increase of more than 14 percent over the 19,400,000 total for the same period of 1954. Stocks at plants and warehouses on October 1 were 318,410 bbl. compared to 373,609 bbl. at the same time in 1954.

It is possible that there might have been some slackening off in production and shipments toward the end of the year due to the early onset of winter and its severity. Figures for October, however, show an increase of 19.0 percent in production and 27.6 percent in shipments over October, 1954, probably an indication of the effect of new capacity brought into production during the year.

Imports through August 31 totaled 1,010,204 bbl., down more than 9 percent from the 1,105,451 bbl. total through August, 1954. There is no official information on the amount of portland cement exported but it probably exceeded the 117,222 bbl. total through October, 1954.

The chief deterrent to production and shipments in 1954 apparently was the very slow start of construction activities in Canada and a lack of really large construction jobs. According to one producer: "The demand for cement has come from a very large number of small jobs. In early summer all of the stockhouses were full and clinker had to be stored outside in the yards to keep the kilns in operation. This is a most unsettling condition. Then the demand came and the cement could not be ground and shipped fast enough." This unbalanced shipping season, another said, is reflected in higher costs and uncertainty of planning.

Another producer in eastern Canada said: "We had no difficulties as far as production is concerned. Coal, power, gypsum, brick lining, grinding balls and spare parts have



This aerial view of the St. Lawrence Cement Company's new plant at Villeneuve, Que., Canada, shows its location on the St. Lawrence River. In the background the homes in a residential section can be seen.

D Tournapull Rear-Dump's ability to turn around in only 24'8" enables it to spot fast in tight quarters. With 10 to 11 passes of ¾-yard shovel, unit loads 8 pay yards in about 3 minutes. Big 10'11" x 5'10½" bowl opening, with low rear entry, makes loading easy.

Hauling from pit to crusher, "D's" average 900' distance in 1½ minutes... returning in about 55 seconds. Units' 4-wheel multiple-disc air-brakes assure positive control at all times... give operators complete confidence on winding roads and steep grades.

"Better than trucks where going is tough"

says Superintendent who runs this county quarry

To speed delivery of rock from quarry to crusher, Jackson County Highway Dept. teamed up 2 D Rear-Dumps to handle all crusher requirements.

On the job the "D's" encountered tight loading quarters, rough quarry terrain and underfooting, and adverse grades on haul roads. Unit's speed and maneuverability, plus ease in spotting in restricted places, helped keep crusher well supplied with rock at all times.

1800' cycle in 9¾ minutes

When pictures were taken, the 11-ton "D's" had already moved 28,000 yards of rock to the crusher. Time studies showed that each "D" was averaging 8 pay yds. per load... 1800' cycles were completed in about 9¾ minutes, including 3.65 min. to load and a 3.95 minute waiting time.

"Work in closer quarters"

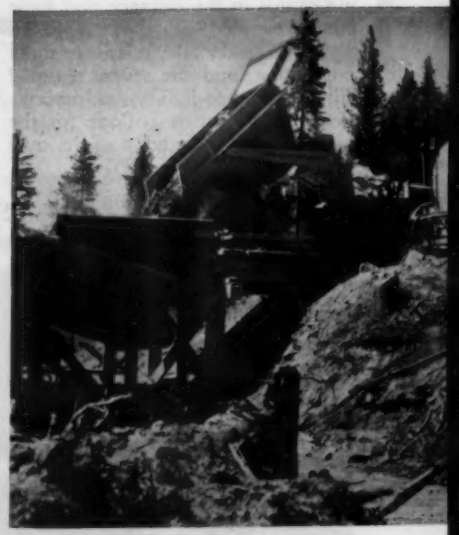
Comparing the operation of the Rear-Dumps to trucks, Supt. Ralph E. Merritt said, "The D Rear-Dumps are a lot better than trucks where the going is tough." Operator Floyd Sherman added, " 'D's' can get around in a lot closer quarters, too."

Safer than trucks

Besides being faster and more maneuverable than ordinary trucks on rough roads, D Rear-Dumps are also safer when dumping loads. Front-wheel-drive on "D's" keeps power and traction on solid footing well ahead of rear wheels. Because body does not need to clear frame, springs, axle, or differential, its center of gravity stays low, even during dumping. Over-size multi-disc air brakes — with more braking surface on one wheel than comparable-size trucks have on all four — prevent creeping or rolling, especially when dumping.

If you have a tough hauling job... better check D Rear-Dump's advantages for yourself. See how the 11-ton "D", 22-ton "C" or new 35-ton "B" can help you.

Tournapull—Trademark Reg. U.S. Pat. Off. DR-903-P-bw



At crusher, "D" dumps 8-pay-yard load in 20 seconds. Operator Floyd Sherman said, "You can get around in a lot closer quarters with 'D's' than you can with a truck." He added, "These D Rear-Dumps are not as hard on the operator as many other types of haulers."

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

been available. We had no loss by shortage of labor or by strike. Labor wages increased this year and material did too, especially coal. However, our price for cement has not changed."

Apparently every company operated at capacity but there were no long serious shortages. In many areas small local delays in shipments did occur but, it is reported, for the most part construction was not held up at all by cement shortages. One company reported that it imported some European cement to help meet the demand.

For 1956 the outlook in Canada is reported to be good but it is felt that there will be some shortage of cement. One company says: "For 1956, with the St. Lawrence Seaway under way in Eastern Canada and the continuing boom expansion in Western Canada, it is possible that declays of cement shipments may again occur if weather is favorable for construction. Shortages of other building materials may also accentuate these delays as concrete construction is substituted for these short materials. We are certain, however, that no large enginereing construction jobs will be delayed for lack of cement in Canada. . .

"Rising costs, rising freight rates, prices of supplies and expanding production continue to appear as warning clouds in the distance and these factors, coupled with the tremendous distances in Canada, relatively small population, and the severe seasonal climate, tend to indicate an optimistically conservation outlook for the industry in 1956 and a slight over supply of cement in 1957."

The capacity of the cement industry in Canada was again increased considerably in 1955, by the construction of one new plant in Winnipeg, Manitoba (Canada Cement Co.), which added 1,600,000 bbl. annually to capacity, and by additons to other plants in all parts of the country.

The modern packing station at St. Lawrence's Villeneuve plant, with silos mounted over bagging machine. Note the covered loading area.

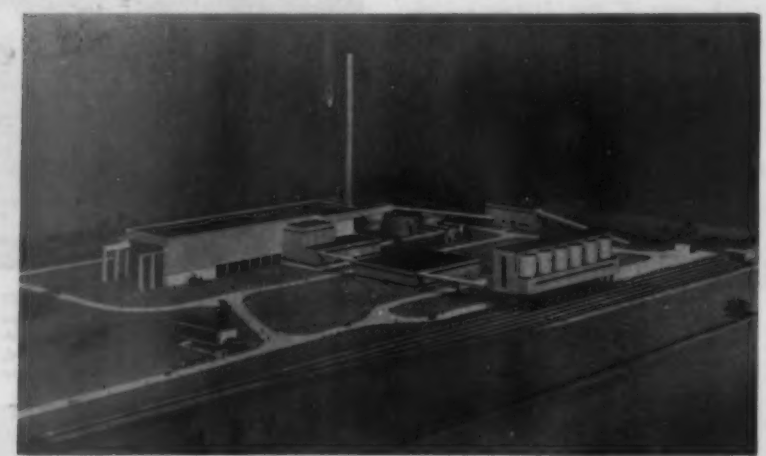
A vast expansion program now under way assures a much greater increase in capacity in 1956. Three plants now known to be under construction—Canada Cement Co., Beechville, Ont., St. Lawrence Cement Co., Clarkson, Ont., and Inland Portland Cement Co., Edmonton, Alta.—and a new clinker grinding and packing plant (Canada Cement Co., Edmonton, Alta.) will add more than 4,000,000 bbl. annually to the capacity of the industry. Expansions of existing plants in various parts of Canada will total at least 4,000,000 bbl. annually but it is not known how much of this will replace old capacity.

Further expansion in 1957 is assured by projects already under way or planned.

There are indications that other new plants may be built in Canada soon. The International Cement Co., a British-backed concern, was recently reported to have let contracts for equipment for a $5,000,000 new plant to be built on a site 11 miles east of Chilliwack, B. C. Daily output of 2,500 bbl. is planned with completion about May 1956.

Another proposed new plant is that of the Saskatchewan Cement Corp. Ltd. for Regina, Sask. It would have an annual capacity of 850,000 bbl. and would cost $8,000,000. It was recently announced that construction would begin immediately.

It is reported that the Associated Portland Cement Manufacturers of England may build a new plant at Ingersoll, Ont. It would have a capacity of 2,000,000 bbl. annually and would cost a reported $20,000,000.



A scale model of the new St. Lawrence Cement Company plant which is being constructed near Toronto, Ont.

Canada The Canada Cement Co. in 1955 continued at a rapid pace the expansion program which it has carried on almost without interruption since V-J Day. Early in the summer its new wet process plant at Fort Whyte, near Winnipeg, Manitoba, went into operation, adding 4,500 bbl. daily or 1,600,000 bbl. in capacity. This is in addition to the existing plant of the same capacity, where another kiln is being installed. Equipment in the new plant includes a 12- by 450-ft. F. L. Smidth kiln as well as crushers, mills, etc.

Late in 1954 work was begun on a new 1,000,000-bbl. clinker grinding and shipping plant at Edmonton, Alberta, and this is expected to be operating by the summer of 1956. Clinker will be shipped to this plant from the Exshaw, Alta., plant but it is so designed that it can eventually become a complete cement plant.

The installation of a new grinding department is being completed at the Belleville, Ont., plant as are also new packing and shipping facilities at the

100 miles per day

for general clean-up tractor at large Eastern quarry

Thousands of tons of limestone and overburden are removed daily from this Eastern pit, one of the largest quarries in the country. Recently, to speed clean-up on the several hundred acre spread, the quarry owner replaced a crawler-tractor with a 186 hp rubber-tired electric-control Tournatractor.

This 19 mph unit proved so successful, it now works 3 eight-hour shifts daily, 5 days per week. Each day, it travels more than 100 miles around the pit to do its work — 40 to 45 miles on the day shift, 30 to 35 miles on each of the two night shifts.

All-purpose tool

Its major assignment on all shifts is to clean up for 2 shovels, located 1½ miles apart, and to maintain 2 overburden dumps. Traveling job-to-job at speeds to 19 mph, it usually makes 4 trips per shift to each of the shovels and 4 trips to each of the dumps. In addition to these 16 trips and 16 clean-up periods per shift, the versatile unit still finds time to do odd-lot tasks. Five or six times a day, it cleans up around the crusher. During travel between shovels and dumps, it helps a motor grader clean rock spillage from the haul roads.

Instant-shift, constant-mesh transmission enables this highly mobile unit to doze in and back away in a hurry, without delay to shovel. Torque converter eliminates jolting gear changes.

OPENED 40 YEARS AGO, THE QUARRY NOW PRODUCES 15,000 TONS OF MATERIAL DAILY

Most is put through large primary crusher on the following schedule:

DAY SHIFT

1. Limestone: bulk of tonnage shipped by rail.
2. Undersize stone: part made into agricultural lime; balance used for commercial stone.

NIGHT SHIFTS

3. Commercial stone: sold locally for highway and concrete work.
4. Sand: sold locally for highway and concrete work.
5. Rip-rap stone: supplied primarily to railroads.
6. Removal of overburden varying from 6 inches to 40 feet in depth. About half is stone suitable for local sales; the rest, low-quality stone and dirt, is dumped into worked-out sections of quarry.

Despite its greater speed, men on the job report Tournatractor has been far less costly to maintain than track-type tractors. In 9 months of round-the-clock routine, the machine has been shut down only 3 times for minor repairs, not at all for major repairs. Its mechanical efficiency has been better than 95%.

"Tournatractor has done a good job — especially on shovel clean-up," says the assistant quarry superintendent. "Its mobility is very satisfactory."

"I like the rubber tires," adds the Tournatractor operator. "They get you to a job faster, and help you do the work faster. The fine seat makes work a lot easier, too."

If your work involves abrasive materials, or jobs scattered around a large area, it will pay you to investigate Tournatractor. Ask for a demonstration!

Tournatractor—Trademark Reg. U.S. Pat. Off. T-620-Q-bw

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Montreal East, Que., plant. Also at Montreal East a new 12- by 450-ft. kiln is being installed which will increase the capacitly of this plant to over 20,000 bbl. daily. This kiln is to be in operation by July 1956.

The big news for 1956, however, is the new $10,000,000 plant now being built at Beachville, Ont., for operation in the summer. This plant will have a capacity of 4,500 (Canadian) bbl. daily or 1,500,000 bbl. annually. Included will be a new F. L. Smidth kiln.

British Columbia The British Columbia Cement Co. Ltd., a subsidiary of the Associated Portland Cement Manufacturers, London, England, several months ago announced plans for a 2½ year expansion program at its Bamberton, Vancouver Island, B. C., plant. This work is now under way and will include a new kiln and mills to be ordered in England. Capacity will be increased 1,000,000 bbl. to 3,200,000 bbl. annually at a cost of $4,000,000.

Ciment Quebec Ciment Quebec, Inc., St. Basile, Que., in 1955 made minor improvements in its plant. Now under way for early completion is a new 400-t.p.h. crushing plant including crushers, screens and conveyors. Planned for 1956 is the installation of a third kiln, three grinding mills and a bank of 10 cement silos.

Inland The Inland Portland Cement Co., Ltd. is reported to have a 900,000 bbl., $8,000,000 new plant under construction in Edmonton, Alta., for completion early in 1956. This will have an 11- by 340-ft. Allis-Chalmers kiln. Recently it was announced that the capacity will be doubled at an additional cost of $4,000,000 for completion in 1957. This company is owned by Le Societe Generale de Belgique of Brussels, Belgium.

St. Lawrence The St. Lawrence Cement Co., which held the spotlight late in 1954 with its new $11,000,000 plant at Villeneuve (near Quebec City), Que., several months ago announced its intention to build a new $15,000,000 plant at Clarkson, Ont., 15 miles west of Toronto. Construction began in September. Production at this 1,500,000-bbl. plant is expected to begin by January 1, 1957. Equipment will include a 12½- by 402-ft. kiln and in many ways this plant will be similar to the one at Villeneuve. This company is controlled by Holderbank Financiere S.A. of Switzerland, a firm which operates 21 other plants throughout the world. Plans have just been announced that the size of the Clarkson plant will be doubled at an added cost of $12,000,000.

St. Mary's The St. Mary's Cement Co. Ltd., recently let contracts for a $2,500,000 expansion program at its St. Mary's, Ont., plant. The addition of a new kiln will increase capacity 750,000 bbl. to 3,000,000 bbl. annually. This is the third such expansion made at this plant since 1948.

Stolley Construction

(*From page* 65)

second deck receives final gradation on the bottom deck, where gravel retained is carried by spout and an 18-in. delivery conveyor to the other of the two coarse-material dewatering units, and sand passing goes directly to the sand dewaterer. Additional water is applied on this bottom deck to insure loosening and removal of undesirables.

After passing through the coarse-material dewaterers, which are equipped with shale removers, the product gravel goes over its respective buzzer screen, where new water is applied by spray pipes for a final rinsing. Gravel retained on the single deck of the buzzer screen is carried away by an 18-in. portable conveyor. Meanwhile, in the fines material dewaterer on the main unit, silt and other impurities are separated from the sand and the cleansed sand is discharged onto a portable stockpiling conveyor.

On the job for the Kist Ready-Mix Company, the Stolley plant averaged from 200 to 250 t.p.h., with 20 percent crushing. Product sizes were minus No. 4 mesh sand, plus No. 4 minus ⅜-in. pea rock, and ⅜-in. to 1¼-in. concrete stone, plus oversize which was discarded. Rated capacity of the 512-VW ranges up to 340 t.p.h., depending on the percentage of sand in the deposit.

$1,000,000 Expansion Planned By Alpha for Ohio Operation

A $1,000,000 expansion program is planned by the Alpha Portland Cement Company for its riverside plant in Coal Grove, Ohio, near Ironton.

According to E. S. Brownstead, general manager for Alpha, the expansion of present facilities will include an additional milling plant, which will eventually double the present capacity.

Smith Engineering Works Publishes Aggregates Manual

To mark its fiftieth year in business, Smith Engineering Works, Milwaukee, Wis., has published *Aggregate Producers Handbook*, a 124-page, handy pocket-size reference book which is replete with valuable information for producers of materials used in concrete construction of all types. General distribution of the book to Smith agents and customers will be an event at the conventions of the National Sand and Gravel Association, and the National Crushed Stone Association, both to be held at the Conrad Hilton Hotel in Chicago this month.

In addition to data pertinent to the products of the company, including Telsmith apron feeders, jaw, gyratory, intercone and gyrasphere crushers, heavy-duty scalpers, Vibro-King screens, super-scrubbers, and sand classifiers, the loose-leaf book contains valuable detailed information and tables on practically every subject which might even remotely concern producers of nonmetallics.

Arranged in a handy form which will appeal to operating personnel, this data book combines the latest specifications and essential information on aggregate production and aggregate-handling equipment.

International Minerals & Chem. To Double Output at Bartow

A multimillion-dollar expansion program, expected to double the production capacity of the Bonnie plant of International Minerals and Chemical Corporation near Bartow, Fla., has been announced by Louis Ware, president.

The Bonnie plant is the major unit of the corporation's Phosphate Chemicals Division and manufactures triple superphosphate and feed grade dicalcium phosphate.

The following officers were elected recently to head the Longhorn Portland Cement Company: W. M. Thornton, executive vice-president and general manager; Carl A. Barlow, secretary-treasurer; and R. H. Stewart Mitchell, vice-president in charge of sales.

The Southern Finance Corporation of Los Angeles recently concluded plans for the construction of a wet-process gravel plant near Fontana, Calif.

Technical Sessions and Field Trip Highlight Industrial Minerals Meeting

Three-Day Program Held in Charlotte, N.C.

SEVERAL highly informative papers were presented recently at the three-day fall meeting of the A. I. M. E.'s Industrial Minerals Division. Over 100 persons were in attendance during the two days of technical sessions, held on October 27 and 28 at the Hotel Charlotte, Charlotte, N. C. A group of about 55 followed up those meetings with a field trip to nearby mines and mineral processing plants on Saturday October 29.

Registration took place during the first morning, after which the Industrial Minerals Division's Executive Committee held its meeting. The first technical session, held on Thursday afternoon, was presided over by G. W. Josephson, chairman. Dr. Byron Cooper set the theme of the meeting with the first paper—a discussion of Appalachian geology and mineral deposits. Following that topic, H. E. LeGrand presented his paper on the subject of ground water occurrence in the igneous and metamorphic rocks of the southern Appalachians.

Considerable interest and discussion were stimulated by a treatise by W. I. Duvall and movies covering blasting research. These brought quick response from many members, who displayed considerable interest in the cost picture relative to blasting operations, and subsequent necessary crushing or grinding.

A symposium on quality controls for industrial minerals covering mica, barite, kyanite, and titanium minerals took place during the next technical session on Friday morning. Contributors of the respective papers on these subjects were R. M. Grogan, session chairman, and speakers Ralph Adair, L. G. Wilson, S. J. Beers, and R. M. Lewis.

The ladies were in attendance for the first item on the agenda of the afternoon session—a movie presented by National Lead Company titled, *Titanium—from Ore to Metal.* F. M. McKinley presided as chairman at this meeting, during which papers by J. Walton on kaolin mining and milling, and by E. R. Goter on pegmatite mining for spodumene were presented for the final discussions.

One of the high points of the entire program was provided by the

Oscar M. Wicken (left), general chairman of the meeting, and James Mair, dinner speaker, who discussed business practice for the engineer.

Thursday evening dinner speaker, James Mair of Chicago Bridge and Iron Comapny. In leading up to his topic, *Business Practice for the Engineer,* Mr. Mair presented a number of humorous definitions of experts, engineers, salesmen, and purchasing agents. He then discussed for his listeners the pitfalls faced by engineers when they purchase, specify, or sell processing equipment.

On Friday evening a cocktail hour preceded an informal dinner dance for which entertainment was provided by enlisting the talents of the guests themselves. This interesting procedure was skillfully handled by Art Hall who, after having very successfully guided a similar program at Lake Placid the previous year, has established a tradition for this type of entertainment.

Early Saturday morning the group of 55 members and wives participating in the field trip took off by automobile on a round of nearby industrial minerals producers. The first stop was made at the Commercialores, Inc., a kyanite property located at Henry Knob near Clover, S. C. Before making the climb to the hill-top quarry the group was briefed on the operation by S. J. Beers, superintendent, and T. Kesler. A variety of minerals in evidence attracted the attention of the geologists in the party, while for the rest the scenic view provided an ample reward for the effort spent in the climb.

From Henry Knob the group drove back into North Carolina, and after lunch they made their next stop at the Foote Mineral Company's spodumene-pegmatite operation at Kings Mountain. After touring that facility the party made its last call at the mica mine and processing plant of the Kings Mountain Mica Company, where decomposed granite is treated in two mills producing finished mica products.

Technical details and routing of the group was handled in large part by Mr. Kesler. Oscar Wicken, who headed the business of organizing and directing the meeting, received a vote of thanks from all who attended.

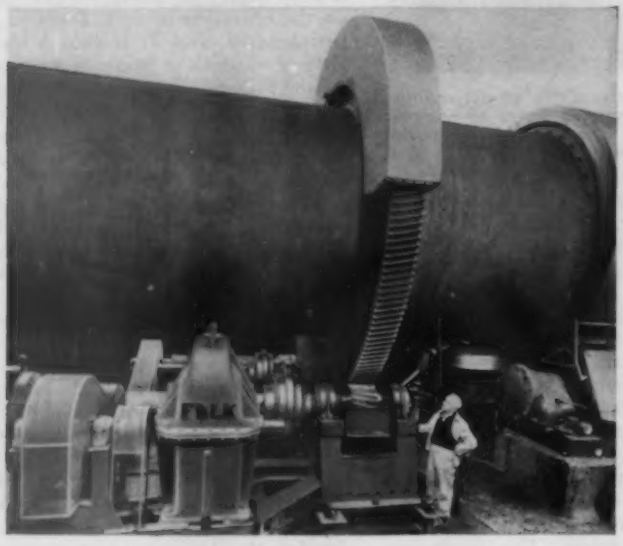
The first stop on the field trip was at this kyanite operation of Commercialores, Inc., on Henry Knob near Clover, S.C.

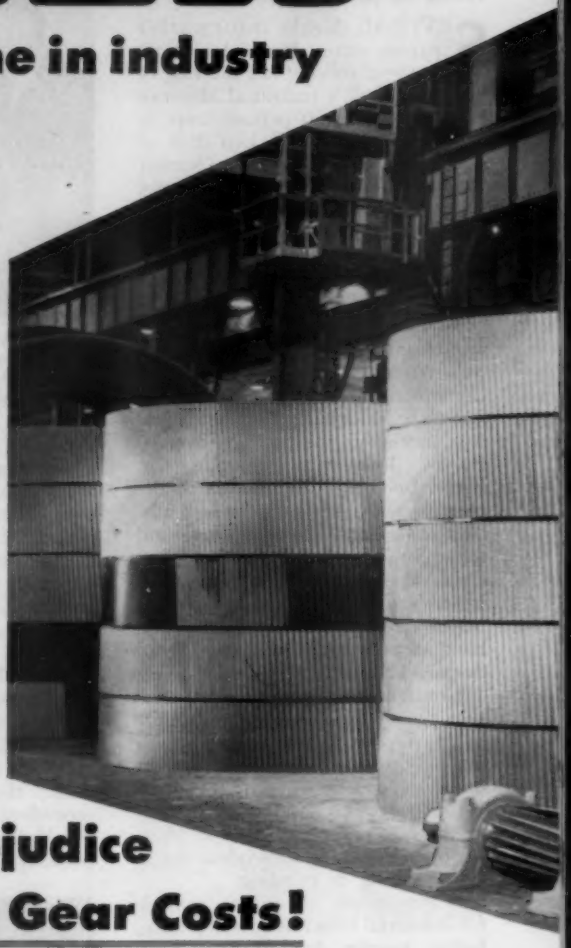
Gears by FALK

. . . a good name in industry

RIGHT: Single helical ring gears being prepared for shipment.

BELOW: Falk tandem-drive speed reducers, couplings and single helical split ring gears, shown driving a cement kiln 11′ 3″ in diameter x 450′ long.





Falk's Freedom from Prejudice Can Cut Your Gear Costs!

It is false economy to use spur gears on applications which need modern helical gears. Further, it is a mistake to use a *double* (herringbone) helical where a *single* helical will serve more satisfactorily—or vice versa!

You'll find it *good business* to consult Falk—long-recognized leader in precision gear development—on your gear needs. For Falk is best equipped to recommend and produce the proper gear for any requirement—single or double helical, or spur—without prejudice! This freedom from bias is your assurance of getting the exact gear you need—and getting the maximum return from your gear investment.

Operators and engineers know that precision-cut Falk Helical Gears (with two or more helical-cut teeth sharing the load at every instant) last longer, are less subject to destructive damage from ever-present abrasives than gears of any other type. Helicals wear *in*, instead of wearing *out!* Because of their higher possible ratios, helical gears permit use of higher-speed motors.

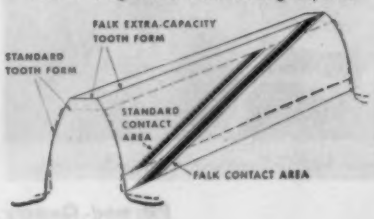
Falk Helical Gears are the most efficient gears (98½%) you can buy. They bring you substantial savings: Your long-range gear costs are less because helicals last longer. You save on maintenance, prime-mover costs, power bills, floor space. Power transmission is smoother, hence driving and driven machinery performs better, has longer life.

Consult the nearest Falk representative, and write for **Bulletin 6170,** "Advantages of Helical Gearing."

THE FALK CORPORATION . . . 3001 W. CANAL ST., MILWAUKEE 8, WISCONSIN

GEAR FACTS FOR ENGINEERS

One factor determining gear rating is the amount of contact area (length and width) on teeth when engaged. With spur gears, the contact area is a narrow band, parallel with the axis of a single tooth. With helical gears, total contact area is the sum of the oblique contacts over the face of two or more teeth. Thus helical gears have substantially greater capacity than spur gears.



The Falk Helical Gears offer a special extra-capacity tooth form. The extra capacity is obtained by cutting deeper teeth that are broader at the base than ordinary helical tooth forms. This results in the larger contact area and stronger tooth shown in the sketch. Years of laboratory tests and thousands of actual field installations have proved conclusively that the exclusive tooth form of Falk single helical and herringbone gears provides substantially superior load-carrying capacity.

Slag Plant Operators Group Holds Third Annual Meeting

Slag Plant Operators Committee of National Slag Association at its third annual meeting in Birmingham, Ala.

By ROY L. PECK

ATTENDED by representatives of most of the members of the National Slag Association, the Plant Operators group of the association held its third annual meeting at the Birmingham Downtown Club, Birmingham, Ala., January 9, 10, and 11. The first two days of the meeting were devoted to spirited and stimulating discussion of subjects of particular interest to the operating personnel, who made up the greater portion of those in attendance.

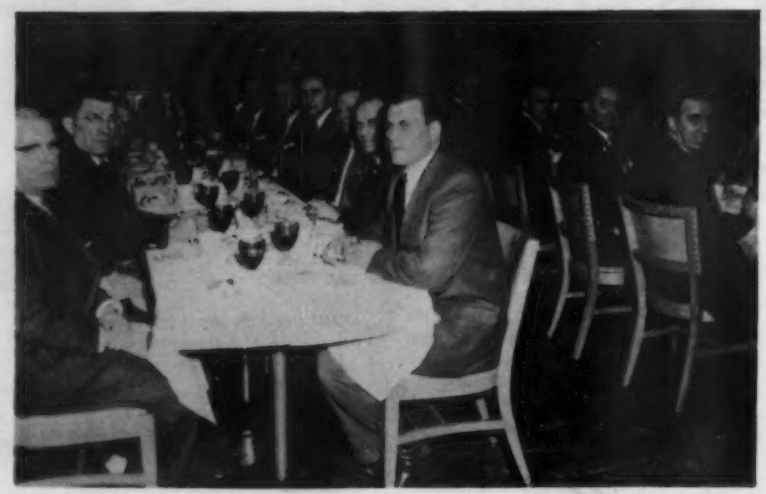
On the last day the group took a bus trip 35 miles south to inspect the new fluxstone production plant of the Stockbridge Stone Corporation, located at Calera, Ala. The plant is owned jointly by the Birmingham Slag Company and Lambert Bros., Inc., Knoxville, Tenn. The visitors returned to the city in the afternoon to visit several of the local slag operations in the vicinity of Birmingham.

At the luncheons held on the first two days of the meeting, the visitors were the guests of Charles W. Ireland, president of Birmingham Slag. Other representatives of that firm efficiently took over the guidance of parties visiting the Calera plant. This tour was one of the highlights of the meeting, regardless of the inclement weather which prevailed throughout the three days. The Stockbridge operation is basically a fluxstone quarry from which chemical-grade limestone is produced having the proper requirements of silica and high calcium demanded by its major customer, the Tennessee Coal and Iron Division, United States Steel Corporation.

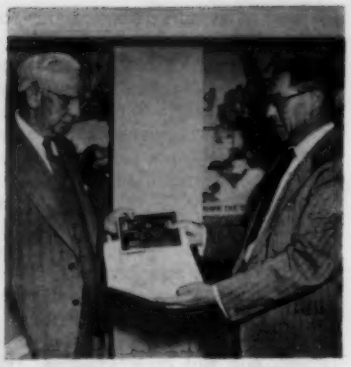
Another highlight of the meeting was the presentation of the PIT AND QUARRY trophies to the two slag plants which had the best safety records in 1954. This, the sixth of the annual safety competitions sponsored by the N.S.A., was conducted by the Bureau of Mines, U. S. Department of the Interior. The bronze plaques, symbolic of top honors, were presented to the winners by Roy L. Peck, field editor of PIT AND QUARRY, at the annual luncheon on Monday.

The trophy for Group A plants which operated 60,000 or more man-hours annually, was awarded to the Foamed Slag Plant operated by the Bethlehem Steel Company at Sparrows Point, Md. The safety record achieved was an injury-free year during which a total of 115,189 man-hours was worked at this plant. This was the first year the plant enrolled in the contest, and the winning of the trophy clearly showed the determination of each employee and supervisor to practice safety in his work each day. W. H. Spooner, superintendent of the Foamed Slag Plant, received the bronze plaque describing the accomplishment of his plant.

For the second consecutive year, the Donora Plant, operated by the Cambria Slag Company, Donora, Pa., won top honors in Group B, slag plants which operated less than 60,000 man-hours in the year. This was the fifth year the Donora plant had participated in the competition, and during that period it won the trophy in 1950, 1953, and the current year. In 1952 it was not a competitor. During the five-year period the plant had competed in the contest, it had only one lost-time injury charged against it, for a loss of 8 days. In the latest year the Donora plant had an injury-free record of 57,571 man-hours worked. Harold Turner, Cam-



A group of the operators at the annual luncheon held in Downtown Club in Birmingham.



Award of the PIT AND QUARRY safety trophies to the Group A and Group B winners of Bureau of Mines competitions. Left: Milton McCall, Bureau of Mines District Supervisor, Birmingham, Ala. presents trophy to W. H. Spooner (right), superintendent, Foamed Slag Plant, Bethlehem Steel Co. Right: Harold Turner, president, Cambria Slag Company (left) receives trophy from Mr. McCall.

bria's president, accepted the bronze trophy on behalf of his co-workers.

In both groups of competition, individual safety certificates of achievement, each bearing the name of an employee in the winning plant as a commendation for his contribution to the record set, were presented by the Bureau of Mines and accepted by Messrs. Spooner and Turner for their respective fellow workers. Five other plants enrolled in Group A and 18 other plants in Group B had injury-free records during the 1954 contest, these being ranked in the order of their man-hours of exposure to hazard during the year. E. W. Bauman, N.S.A. managing director, presented Bureau of Mines Certificates of Accomplishment in Safety to these 23 plants.

Milton McCall, district supervisor, U. S. Bureau of Mines, Birmingham, Ala., addressed the luncheon group, congratulating the members on the remarkable record of safety attained by 24 of the 49 plants which were enrolled in the competition. These plants were operated without injuries in a working aggregate of 980,546 man-hours during 1954. This group of 24 plants, he said, was the largest number which worked without a lost-time injury during the 6 years the contest has existed; and 49 plants was the greatest number ever enrolled.

Mr. McCall also awarded certificates of achievement in safety to some 17 plants which had an injury-free record during the "slag year" (April 1 to March 31 of the following year) and whose worktime was 20,000 man-hours or more. He said that this safety competition is open to any slag-processing plant meeting the requirements as to man-hours worked, and urged that all the plants of the industry be so enrolled. A plant may be enrolled by applying to the Branch of Accident Analysis, Bureau of Mines, Washington 25, D. C.

During the two full-time meetings on Monday and Tuesday a dozen subjects or more were thoroughly discussed by the operators' group. Included in the agenda were the following: the merits of sealed *versus* anti-friction bearings on conveyor idlers or pulleys; how job automation can be encouraged to greatest advantage with a resulting increase in tons of slag produced per man-hour; the search for better, cheaper metals on abrasive wear jobs, including the merits of re-pointing dipper teeth, etc.; wire rope types and their proper lubrication; chute linings;

Right: A Buffalo Slag Company foursome: August W. Sauer, W. F. Pierce, Ray R. Smith, and G. S. Snyder.

Below, left: C. E. Heil (Duquesne Slag Products Co.); L. L. Warren (Birmingham Slag Co.); D. B. Dimmig and S. B. McCabe (American Materials Corp.).

Below, right: W. R. Moore (Cleveland Slag Co.); Edward C. Levy Jr. (Edward C. Levy Co.); W. E. McDermut and R. K. Merring (Illinois Slag and Ballast).

proper types and applications of screen cloth.

Other subjects receiving the attention of the operator personnel included internal paints and plant building covering which would be resistive to vibration and corrosion; tire selection and maintenance; recovery and disposal of waste slag or washer tailings from washer screens; plant operations; productive problems; personnel relations; and labor-management problems. Several other subjects had been scheduled for discussion, but because of lack of time these could not be covered in this meeting and will be discussed next year.

The agenda had been carefully determined from replies received to letters sent by K. K. Kagarize, Standard Slag Company, Youngstown, Ohio, chairman of the operators' group, to a number of the representative members of N.S.A. A consensus of these replies was the basis of determining the type and length of the meeting, the subjects to be discussed, and the location of the meeting. It is apparent that this method of preparing the agenda results in a periodic interchange of practical information of maximum benefit to the participants. We know of no better way to reach an exchange of opinions on a variety of good and bad practice, especially helpful as it includes nearly 100 percent participation on the part of those present. Introduction of all participants and their associated companies was made at the initial meeting.

Incoming and outgoing chairmen of the Slag Plant Operators Committee: J. A. Carnathan (Birmingham Slag Co.) (left) and K. K. Kagarize (Standard Slag Co.).

A considerable discussion ensued on the subject of encouraging automation in slag operations to obtain an increase in tons per man-hour production. One operator asked for and obtained an expression of opinion on actual unit production in the plants represented. The deviations from the average unit production illustrated his contention that all producers need occasions such as this one to get a clearer view of what others are successfully accomplishing. It was generally conceded that the high degree of instrumentation available today should be studied and tried out to increase unit production.

Discussion as to the best methods of cleaning conveyor belts elicited informational comment, as did a subsequent examination of ways of extending the life of shovel teeth. It was generally agreed that a conveyor is usually a more efficient device than a chute for moving materials, but it was shown that in both cases many factors must be taken into consid-

Left: Ed W. Bauman (managing director, N.S.A.); Roy L. Peck (field editor, PIT AND QUARRY magazine); and Ken K. Kagarize (Standard Slag Co.)

Right: Ken Kagarize (left), retiring chairman of the group, and Charles W. Ireland, (president, Birmingham Slag Co.) talk over the program for the meeting.

Fred E. Hayes (Duquesne Slag Products Co.); J. H. Turner (president Cambria Slag Co.); C. H. Mitz (Duquesne Slag Products).

Three operators from Standard Slag Co. who attended the meeting: J. H. Jackson Jr.; W. H. Allison; and E. E. Miller.

King Size
STONE STACKER

Here's a single wing stacker which moves along 800-feet of track to store various sizes of limestone in 80-foot high piles. It's one of four including a double wing unit which can discharge to either side of a long belt conveyor.

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Completely equipped by Stephens-Adamson, the Inland plant is capable of storing at a 750-ton per hour rate and loading out to ships or railroad cars at 3000-tons per hour. S-A live roll grizzlies, screens, manganese steel feeders and belt conveyors are tied together in a centrally operated system which even today meets every demand of the popular cry for "automation".

S-A bulk material handling systems like this one are doing their stuff every day all over the world. From the simplest to the largest, most complex conveying and processing problems, none are too tough for S-A designing and manufacturing skills . . . Let us prove it.

General view at Inland plant, showing dockside facilities. Height of stone piles minimizes area necessary for storage.

Double wing stacker delivers to either side. Inclined belt is supported by a trailer.

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ENGINEERING DIVISION
Designers and manufacturers of all types of bulk materials conveying systems.

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A complete line of conveyor accessories—centrifugal loaders—car pullers—bin level controls, etc.

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A full line of industrial ball bearing units available in both standard and special housings.

eration in the attainment of uninterrupted operation. The subject of screen cloth types and applications evoked spirited discussion by most of the operators, who related many experience records on various materials and adaptations.

Ball decks seemed to be preferred over heated decks for handling fine, wet materials. Punched plates *versus* screen cloth brought expressions of opinion from many, as did the discussion on stainless steel *versus* oil-tempered screen cloth. After the latter discussion it was agreed that all operators would accumulate data on their use of either type and present their opinions at the 1957 meeting.

The subject of paints and coatings to resist corrosion and vibration aroused much discussion and interchange of valuable experience data, but there was little agreement as to preferred materials or types of application. A practical utilization of fines in waste slag as a salable neutralizer of "pickle liquor" was suggested to some operators who found such disposal a problem. The high potential market value of these high-silica fines was generally agreed on. It was conceded that most vehicle tires were "damaged" out of existence rather than worn out, because of excessive abrasive conditions of the ground around slag production plants.

Several other subjects on which discussion could prove beneficial to the operating men were tentatively listed for consideration in future meetings. In a general summation of the good accruing from meetings of this nature, several of those present expressed themselves in favor of continuing the general format of the meetings. As one operator remarked, he would never miss these meetings, as he felt that he received much practical help from them on his plant problems.

James A. Carnathan, Birmingham Slag Company, was unanimously elected chairman of the Operators Committee of N.S.A. for the forthcoming year, in a business session during the Tuesday luncheon period. He will succeed Mr. Kagarize, who served during the past year. Mr. Carnathan, in accepting the post, related some problems which the slag industry faces today, and urged that all producers come up with some realistic answers to these problems in the next meeting. He named Mr. Kagarize chairman of the program committee for next year's meeting.

Appointed as members of this committee are the following: Edward C. Levy Jr., Edward C. Levy Company, Detroit, Mich.; Wilson E. McDermut, Illinois Slag and Ballast Company., Chicago, Ill.; C. H. Mitz, Duquesne Slag Products Company, Pittsburgh, Pa.; W. R. Moore, Cleveland Slag Company, Youngstown, Ohio; G. S. Snyder, Buffalo Slag Company, Buffalo, N. Y.; J. H. Turner, Cambria Slag Company, Sharon, Pa.; and C. Woodward, Indiana Slag Company, Inc., East Chicago, Ind.

It was decided that the next meeting of the group is to be held in Detroit, Mich., in the latter part of January, 1957, in response to an invitation of Edward C. Levy Jr.

1955 Mineral Output

(*Continued from page* 30)

Domestic production of strategic qualities of muscovite block, film, and hand-cobbed mica increased under the continued stimulus of government purchases for the national stockpile at prices well above market prices. However, production of non-strategic sheet mica slowed. Scrap mica output rose in 1955, as demand for both wet and dry ground mica continued to grow.

Production increases for other nonmetallics were estimated as follows: graphite, 80 percent gain; tripoli, 25 percent; talc, soapstone, and pyrophyllite, 5 to 10 percent; kyanite and clays, 5 percent. Output of natural abrasives other than tripoli, aplite, and gem stones remained about the same.

Feldspar production dropped 5 percent in 1955, principally because of increased use (in the glass-container industry) of nepheline syenite imported from Canada.

Mining of magnesite, dolomite, and olivine rose slightly above 1954. This increase was due largely to growing needs for refractories.

The construction industry continued to expand in 1955; consequently the output of sand, gravel, and stone reached record levels.

Another new high was attained by the portland cement industry. Plants operated at capacity, and several major expansion programs were in progress. Producers indicated in October, 1954, that they intended to expand capacity 38 percent by the end of 1959, and they apparently held to this schedule last year. Output of lime also increased in 1955, to supply growing requirements of the chemical and construction industries.

Production of crude gypsum in the United States jumped to more than 10,000,000 short tons in 1955, a new record. Imports also reached new heights. Two major gypsum mines and plants went into production in the first commercial development of deposits near Shoals, Ind. Plans for further expansion of gypsum-products plant capacity in the near future were announced by several companies, most of which intend to locate at sites where imported gypsum can be used.

Output of both crude and expanded perlite increased substantially in 1955. The rise in crude production exceeded that of the expanded variety because greater quantities of crude were exported. This growth was due to increasing use of perlite in plasters and insulating concrete.

After falling off sharply in 1954, domestic production of fluorspar increased moderately in 1955. Imports reached a record high, and consumption attained a level near the record set in 1953, Bureau statisticians disclosed.

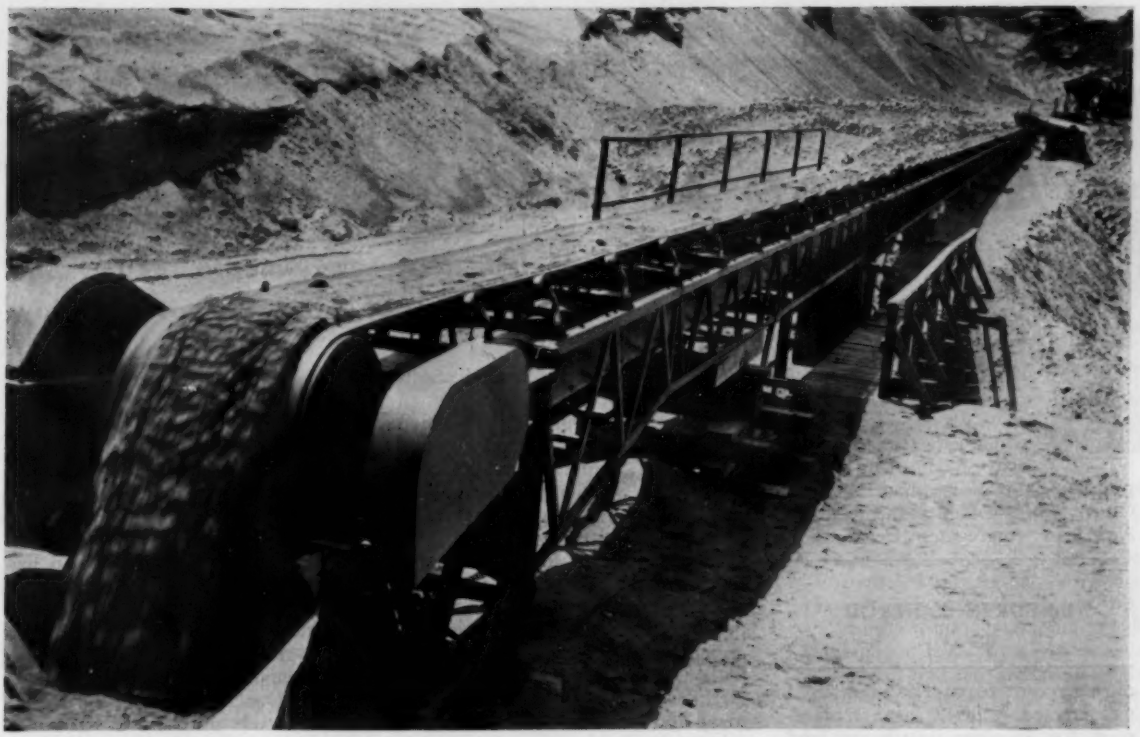
In 1955 sulphur production in the United States was maintained at about the 1954 rate. Sales were greater than output and producers' stocks declined moderately. An important factor in sulphur supply was the development of major Frasch sulphur production capacity in Mexico during the year. That nation now has a substantial surplus available for sale abroad.

Barite output continued at a high level, due largely to demand in the petroleum industry, which needs the mineral for oil-well drilling fluids.

There was a small increase in domestic asbestos output, coming chiefly from Vermont and Arizona, but the bulk of the supply was imported from Canada. Major expansions in Canadian production capacity provided an ample supply for current United States needs.

Domestic production of bauxite in 1955 was estimated at 1,900,000 long tons, down slightly from the record peacetime high of 2,000,000 tons reported for 1954. Bauxite imports decreased four percent during the year to an estimated 5,100,000 tons. The drop reflected reduced stockpiling requirements rather than a lessening consumption. As in the previous two years, domestic ore represented slightly more than 25 percent of the total new supply available for consumption.

The bauxite import pattern continued to change significantly. Imports from Jamaica, which have increased every year since 1952, nearly equalled imports from Surinam in 1955. These two sources account for 95 percent of our bauxite imports.



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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Major Plant, Processing Revisions At Green Oak, Mich., Operation Of AMERICAN AGGREGATES CORP.

include new heavy-media facility and separation of sand and gravel flow

Another ON THE SPOT Report

A NUMBER of operational revisions and improvements — including the installation of a heavy-media separation process—have been made at the Green Oak, Mich., facilities of American Aggregates Corporation during recent years. The plant itself was erected in 1942[1] as a replacement for an older installation, and when placed in operation was considered to be the best plant the company had ever built. With an annual production in excess of 1,000,000 tons, it ranked as one of the most outstanding sand and gravel plants in the country. Its operating design has, from the beginning, provided for the independent operation of pit, plant, and loading operations by establishing adequate raw- and finished-material storage facilities. The post-war years, however, have seen almost a constant flow of changes, involving both digging and processing, that are in line with the company's overall policy of meeting increasing demand for its products with the most efficient production methods. This program of improvement and revision has resulted in a current production capacity exceeding 2,500,000 tons.

By BUREN C. HEROD

Primarily, these changes—at Green Oak as well as at other operations within the company—have involved the introduction of more dredges (there are now four at this location), and establishing completely separate processing of sand from gravel.

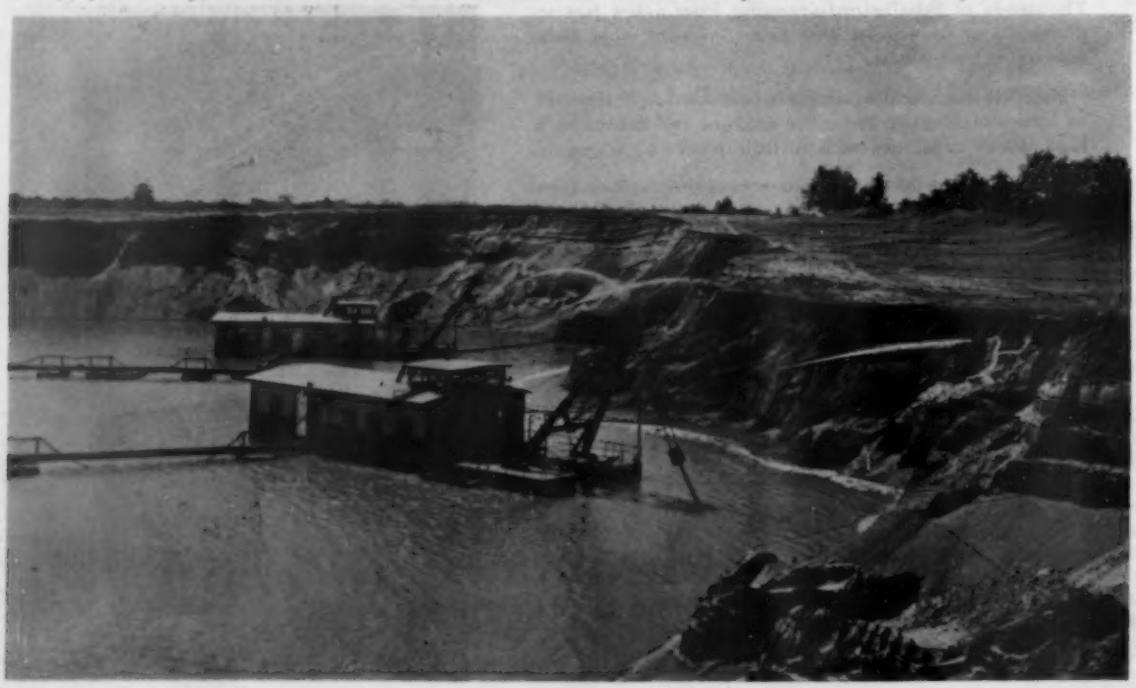
With respect to the new heavy-media process, that operation was incorporated for the purpose of upgrading a portion of an already marketable product by removing substantially all of the deleterious materials. In so doing, the company has also been able to meet the rigid Michigan Highway Department's specifications covering aggregates for above-ground, structural concrete.

Although prior to 1942 desanding had been accomplished at the dredge then in use and the sand subsequently recovered for processing in a small separate plant, this method was discontinued shortly before the present plant went into operation.

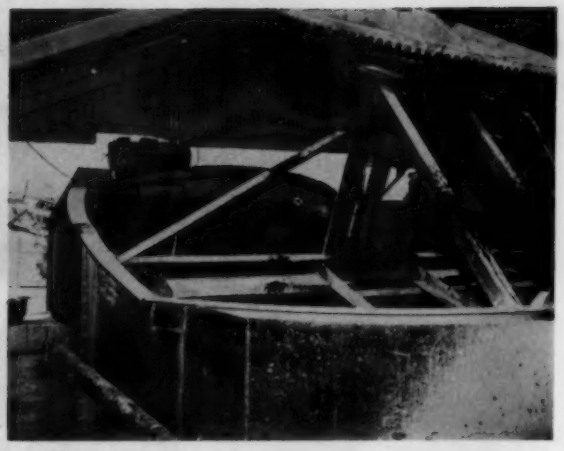
A 5-cu. yd. electric dragline was then installed in addition to the 16-in. dredge already in operation, and

[1]See PIT AND QUARRY, April 1943

At the Green Oak operation of American Aggregates Corporation, three of these 20-in. dredges are engaged in working virgin deposit. Each pumps the dredged material to its own desander for removal of fines before the gravel is fed to the main plant.



Dredged material discharging over the upper of two tabled grizzlies on one of the desanders.



One of four company-designed 14-ft. circular sand drags in the sand plant.

during the war period raw material was hauled in rail cars from a pit hopper—supplied by the dragline—to the plant, which was about one-half mile from that digging area. A sloping rail grizzly on the pit hopper effected the only separation of material—removal of plus 8¼-in. boulders—before the raw feed, consisting of all other gravel, plus sand, entered the plant.

Soon after the war ended, the dragline operation was terminated and a second 16-in. dredge was installed—the plant continuing its dual processing. However, when the three 20-in. dredges now in use were added to the operation during the years 1951 to 1953 (one 16-in. dredge was removed), three desanding stations were also erected—each individually supplied by its own dredge; and once again full separation of sand from gravel plant feed is handled at the dredging area, which is now about 1½ miles from the main plant.

A 60-ft. wide sand fill "peninsula" was placed down the central length of the dredging lake to carry a double haulage track, and the three desanders are located along the tracks near the end of the fill. These desanders are moved from time to time as the pit excavation progresses. A short distance back the new sand plant was erected to process sand recovered by a 16-in. dredge that works exclusively in a water area into which the desander rejects are flumed or pumped. The rail haul of gravel terminates at the south side of the main line of the C & O Railroad, from which point it is moved an additional 1,600 ft. to the main plant by means of a belt conveyor. This conveyor system is described in later paragraphs.

The large volume (about 60 percent) of sand naturally accompanying the gravel in dredge discharge has always posed problems, both in marketing—since a large amount was not readily absorbed—and in otherwise disposing of it. These problems have been solved by the desanding procedure of fluming and pumping sand from the desanders into depleted areas, thus furnishing convenient storage and also allowing for sand recovery and production in more direct relation to demand.

Each of the three larger dredges (20-in.) working in virgin deposit has a hull consisting of five watertight steel pontoons bolted together. Superstructure, roof, and siding are also of steel construction. They are equipped with I-beam-type ladders carrying revolving cutter-heads—the latter having eight manganese steel toothed blades.

All dredges are electrically powered, current being carried from the shore powerline to the dredges through rubber-covered sea cable carried on the same pontoons that support the pipe lines. The 1,000-hp. Allis-Chalmers motors for the Amsco pumps are furnished 4,600 volts. (For smaller motors on the dredges the voltage is stepped down to 440.)

Under ordinary pumping conditions about 1,000 t.p.h. of material is pumped by each dredge to its desanding unit through 20-in. Armco pipe. Sections of the pipe are joined with flexible rubber couplings. At the top of each 36-ft. high structure, the material is discharged onto a pair of inclined, tabled, 5/16-in. slotted grizzlies. The plus 5/16-in. gravel retained on these coal bar screens falls to a bin below for loading into 50-ton rail cars. Undersize material is either flumed or pumped into the area where the sand dredge operates, or is transferred by a 15-in. Amsco pump to an out-of-the-way area.

The sand dredge working on material supplied from the desanders is equipped with a 16-in. Amsco pump powered by a 500-hp. motor. Raw feed to the nearby sand plant is delivered at the rate of approximately 450 t.p.h. through an Armco pipe-

A general view of the sand plant area from the processing building (right) to the finished material stockpiles (left and background).

From the sand plant, material is conveyed on these parallel belts to the tower (background), where three boom conveyors discharge to a cloverleaf stockpile area above a tunnel conveyor.

From an under-track hopper (out of view on left), this conveyor transports gravel to the first surge pile (center).

line to a discharge box at the top of the screening building. Here it is flumed to a pair of 5- by 10-ft. Allis-Chalmers Ripl-Flo screens for dewatering and removal of plus ⅜-in. gravel. The latter, a comparatively small tonnage, is chuted into a bin from which it is loaded into the same rail cars that pick up gravel from the dredge desanding units.

Minus ⅜-in. throughs are flumed to a steel tank from which a pair of 10-in. Nagle pumps elevate them to a battery of four double-deck 4- by 10-ft. Ripl-Flo screens. These screens are equipped with ¼-in. top and 1/10-in. bottom decks. Top-deck oversize is pumped to waste. Material retained on the lower screens (minus ¼- plus 1/10-in. "grits") is conveyed out of the sand plant on a 24-in. belt conveyor to a silo built over a reclaiming tunnel where it is later blended with the minus 1/10-in. sand.

Minus 1/10-in. sand from these four screens is flumed to four sand drags for dewatering. This sand is then conveyed 246 ft. on a 38-in. ribbed belt to the top of a tower on which three boom conveyors are mounted. The latter discharge to a "cloverleaf" stockpile around the base of the tower, and allow for drawing from a dry pile while other piles are being filled.

From these silos and storage piles, sand can be drawn by type, or blended, onto the 30-in. belt of a 300-ft. underlying tunnel conveyor. The latter transfers these sands to a 190-ft. conveyor that rises to the top of a pair of steel truck bins. Discharge can be made into the bins, or onto either of two other conveyors. One of the latter, a 70-ft. long unit, carries material transferred from the truck bin conveyor to a railroad car loading bin. The other carries sand 50 ft. to a concrete truck loading silo. Mounted on this silo is a fourth conveyor on which material can be moved away 230 ft. and discharged onto a winter storage pile which has a capacity of over 50,000 tons.

Desanded gravel—plus 5/16-in.—from the desander bins, and plus ⅜-in. from the sand plant feed, is hauled approximately one mile toward the main gravel plant to a point where a 600-ton under-track hopper has been installed. A Jeffrey-Traylor 42- by 72-in. vibrating feeder below the hopper transfers the gravel to the 36-in. belt of a 300-ft.

The conveying system looking from the tunnel conveyor (right) below the first surge pile, toward the plant. The scalping screen and primary crusher are located in the structure seen at the end of the tunnel conveyor.

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conveyor on which it is elevated to discharge it over the first raw-material surge pile supplying the gravel plant—a pile of about 9,000-ton capacity.

Below this surge pile another vibrating feeder passes the raw material onto a 30-in. conveyor belt. The first 120 ft. of this 506-ft. conveyor is housed in a concrete tunnel. Since the tunnel passes below the mainline of the C & O Railroad, the quickest possible installation was necessary and precast, 80-in. diameter, concrete pipe was used for the tunnel under the railroad tracks. The work of excavation, laying of the pipe, backfilling, and relocation of tracks was accomplished all in one day—a Sunday—with no disruption of rail service.

At the end of the conveyor described above, there is a crushing house where the gravel is discharged on an Allis-Chalmers 5- by 10-ft. Ripl-Flo screen. Used as a scalping unit, the single-deck has 6-in. square perforations. Plus 6-in. rejects are chuted to a Blake type 18- by 30-in. jaw crusher. Screen throughs fall to a 30-in. belt below, where they are joined by the crusher discharge, and both are carried 680 ft. to a transfer point near the main plant. The transfer point was installed solely for the purpose of meeting terrain problems and making a change in direction toward the plant.

Gravel is then picked up on another 30-in. belt and carried 316 ft. to the top of a steel tower over a reclaiming tunnel. From this point it is transferred onto the 32-in. belt of a 137-ft. boom conveyor and delivered to a surge pile of approximately 35,000 tons capacity above the reclaiming tunnel, or dropped directly onto the tunnel. From the reclaiming tunnel, the gravel is conveyed to the gravel plant by means of belt conveyor. The reclaiming tunnel is a part of the 1942 plant construction and is still in service. However, the rail trestle erected at that time to provide for dumping of pit cars over the reclaiming tunnel has been removed.

The old timber construction of this remodeled main gravel plant was replaced with steel and concrete. Sand processing equipment was removed to the separate sand plant.

Operations of the plant are essentially the same as when started in 1942, with the exception of eliminating sand processing in this building. During the shut down seasons of the years 1952 to 1954 inclusive, the old timber construction was dismantled a section at a time and replaced with steel and concrete. The structure was enlarged, and new siding and roofing was installed. Discontinuance of sand processing in this building and removal of that equipment provided space for additional gravel screens, and greatly increased the gravel-producing capacity of the main plant.

The gravel is separated into a number of sizes which are stored in separate bulkheaded bins over a loading tunnel. This method helps control segregation and permits blending of sizes to meet any desired grading specification.

The most significant addition with respect to revised gravel operations is that of incorporating the heavy-media separation process. Early in 1953 American Aggregates Corporation became interested in heavy media as a possible method of removing objectionable material such as sandstone, shale, and chert from a part of the raw feed and thereby adding another (higher-graded) aggregate to its line of products.

After careful evaluation of other installations and considerable testing, a Wemco HMS 5M Mobil Mill was ordered. This mill was designed as a packaged unit by the Western Machinery Company and the structural steel for the plant was prefabricated at the Greenville, Ohio, shop of American Aggregates before shipment to the Green Oak site. The local plant crew, assisted by Western Machinery Company personnel, installed the new mill building adjacent to the main gravel plant during the summer of 1954.

Feed to the heavy-media setup is taken from the main plant flow. About 300 t.p.h. of minus 2-in. gravel is pulled off the scalper screen and passed over an Allis-Chalmers 5- by 10-ft. double-deck Ripl-Flo fitted with ¾-in. top and ¼-in. bottom deck screening. Material is washed on this screen, and that retained on each of the two decks is then dewatered on a following 5- by 12-ft. unit.

This careful preparation of the feed material is of prime importance to the succeeding process for

The new heavy-media operation is housed in the structure on the left, separate from the main gravel flow.

Two Booms — One American 700 Series Crawler

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This single American 700 Series Crawler unit got a big assignment from M & M Stone Company in Harleysville, Pa., recently. First, it was crane boom equipped to install a new rock crusher—then equipped with a shovel front to supply the crusher!

Working from the new concrete footings of the crusher, M & M's 700 Series, with 50-foot crane boom, swung the jaw crusher's 41,300 pound side frame into position at a 22-foot radius. Later, the 40,225 pound rock feeder was spotted in place working at a 20-foot radius.

Once the crusher was installed, the 2-yd. shovel was attached to the American 700 and the unit put to work supplying quarry rock for a production schedule demanding 1000 tons of crushed rock every day!

M & M's faith in the American's ability to take it day in and day out with no downtime is demonstrated by the fact that the 700 is the *only shovel* working in their quarry! Powerful, rugged, the American 700 Series was engineered for tough jobs like this—from specially designed crawler shoes right through to the payload in the bucket. Finger tip air controls keep the operator "sharp"—production rates consistently high all day long! See your American Hoist Distributor for the complete "700" Story!

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several reasons. If the feed were unwashed, fines accompanying the gravel into the separation flow would tend to slime the media, thus making it more viscous and recovery of the media solids—ferrosilicon and magnetite—more difficult. In addition, a greater volume of new media would have to be frequently added to the circuit, since a large amount of slimed media would be tied up in the cleaning (recovery) circuit. If the feed were not dewatered after washing, the moisture in excess of surface film would tend to create a rise in media volume, with a consequent drop in specific gravity. On the other hand, too little water, or dry material would result in a loss of media volume and a corresponding rise in specific gravity.

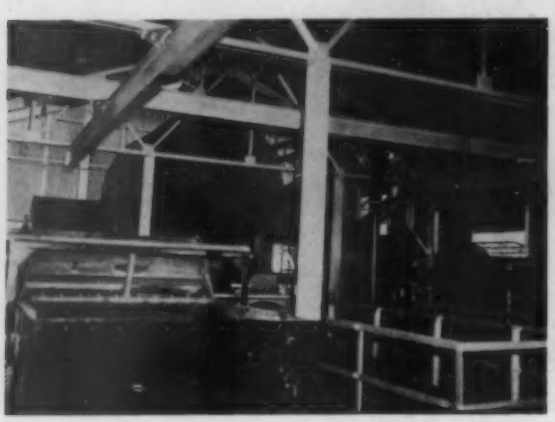
While most of the objectionable material to be separated could be removed at an operating gravity of 2.55, some denser cherts in the feed (all cherts are classified as objectionable in Michigan) have a higher specific gravity than the foregoing figure. Tests revealed that a separation gravity of 2.62 would then be most effective.

To attain the latter figure, a mixture of ferrosilicon, magnetite, and water is fed to a 30- by 54-in. Wemco media densifier. This unit then dewaters the solids and introduces them to a media return sump, where a controlled amount of "make-up" water is added until desired gravity is reached. From the sump, a 6-in. Wemco media return pump elevates the bath and ejects it into a 10- by 12-ft. Wemco drum separator. The motion imparted by the 1.5 r.p.m. of this unit, coupled with the velocity of the media, tends to keep the media solids in suspension.

When the volume of the bath within the drum builds up to the top of what is called the float region, the media overflows and is chuted to one half (3-ft. wide) of a divided 6- by 20-ft. Simplicity vibrating screen. From this overflow, samples of media are taken for analysis of specific gravity. When this is at the correct operating level at the beginning of each shift of heavy-media plant operation, gravel feed is introduced into the drum. During regular operation of the process, the specific gravity is checked every 15 to 20 minutes, with the result that a variation of plus or minus .01 is rarely exceeded.

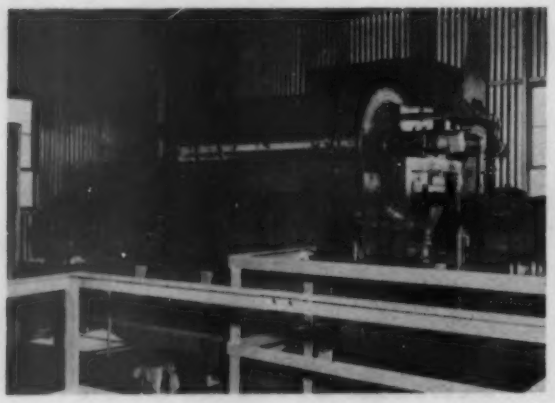
The prepared feed (minus 2- plus ¼-in.) is transported from the main gravel plant to the heavy-media building on a 24-in. belt conveyor and introduced into the back of the drum. Separation then begins to take place, the material of less than the operating gravity rising to the surface of the bath. This material then flows out the discharge end of the drum and is chuted to the "float" product half of the divided screen mentioned above. Gravel with a gravity higher than 2.62 sinks to the bottom of the drum, and from this point it is elevated by horizontal lifters on the inner periphery of the cylinder to a chute. Here an adjustable diverter divides the discharge—one-third is chuted to the "sink" half of the divided screen, while the remaining two-thirds is delivered to

(*Continued on page* 91)

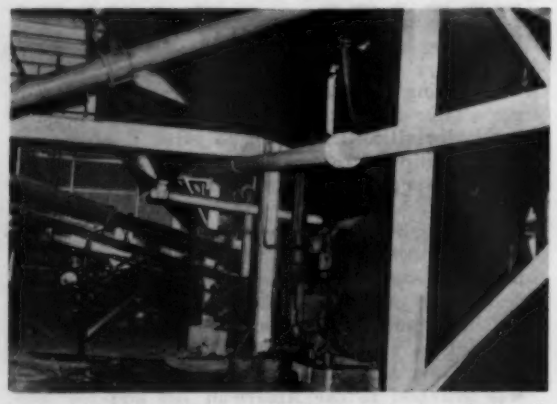


An interior view of the heavy-media plant showing the drum separator (center background) and one of the two screens (left foreground).

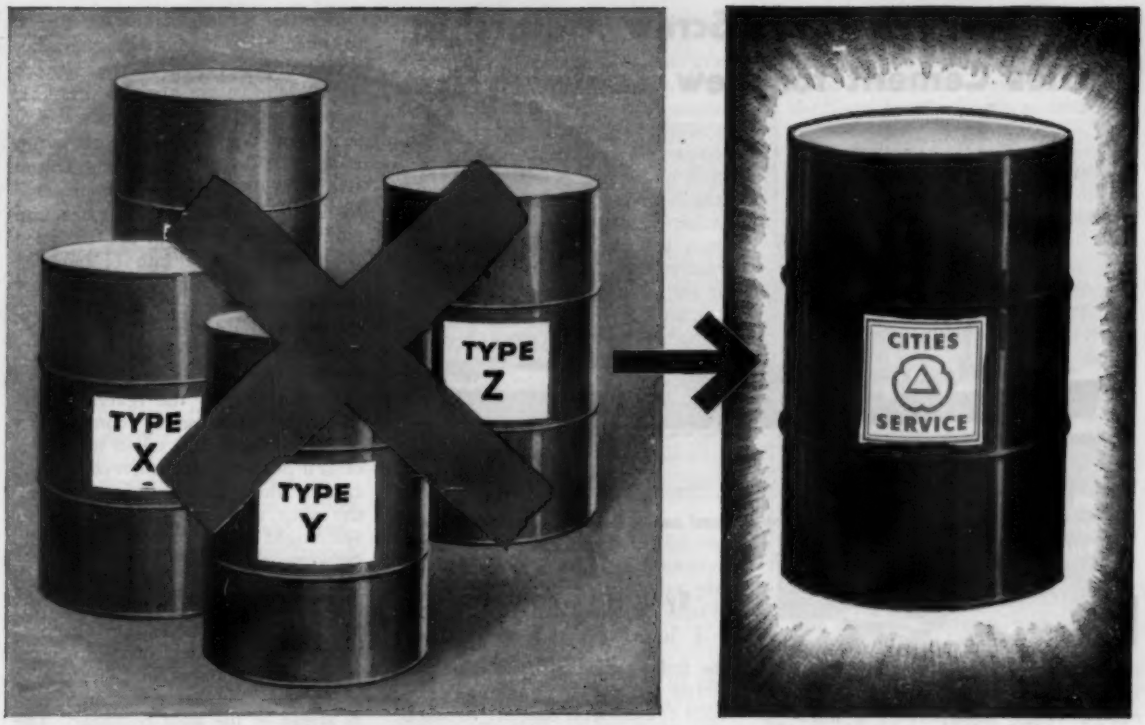
A mixture of ferrosilicon, magnetite, and water is processed through this media densifier which dewaters the solids.



Media solids are recovered from the diluted bath on this double-drum magnetic separator and then returned to the media densifier.



A view below the main floor of the heavy-media plant, showing the pans below the screens, the media return sump, and pumps.



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Self-Unloading Twin-Screw Motorship Carries Cement for New Zealand Firm

The "Golden Bay", 1,400-ton twin-screw cement and coal carrier for the Golden Bay Cement Company, Wellington, New Zealand.

By JOHN GRINDROD

DESIGNED for the special purpose of carrying cement and coal in bulk, the 1,400-ton twin-screw motorship *Golden Bay*, recently built by Henry Robb Limited, of Leith, incorporates a number of interesting cargo-handling features. The vessel is owned by the Tarakohe Shipping Company, Wellington, N. Z., in conjunction with the Golden Bay Cement Company, both connected with the Associated Portland Cement Manufacturers Limited, London.

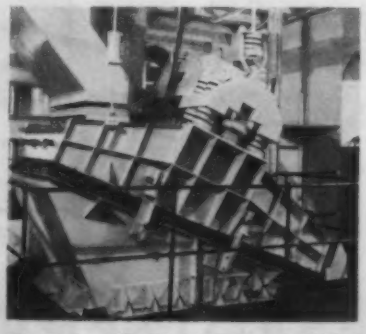
In each of the two holds of the *Golden Bay* is an electrically-driven travelling crawler unloader, capable of travelling the whole length of the hold on rails, which consists of inclined and transverse scrapers. Power is provided by a 5-hp. totally-enclosed Ward-Leonard generator. The motor-driven inclined scrapers move the material down the face of the cargo to the motor-driven transverse scrapers, which then feed the material to two longitudinal drag link conveyors running the full length of the compartment.

Each of the four longitudinal conveyors (two in each hold) is powered by a 35-hp., 20-volt d.c. motor, all controlled from a Ward-Leonard generator, which gives a controlled stall current, and thus a controlled stall torque. Each motor is fitted with field diverters for individual speed trimming during unloading, adjustment being by remote push-button control.

From the longitudinal conveyors the cargo is fed into two elevators, driven by 15-hp. totally-enclosed squirrel-cage motors, which carry the material to the upper deck level, to be fed to a cross-screw conveyor powered by a 25-hp. motor.

Both cement and coal are handled in the same way during unloading, as far as the cross-screw conveyor. For the subsequent discharge of cement the material is delivered by the screw conveyor to a hopper and is thence passed down through a vibrating screen to a Fuller-Kinyon pump into which compressed air is introduced for discharging through a pipeline to the shore storage silos.

The totally enclosed 4- by 8-ft. single-deck Sherwen electro-magnetically-operated vibrating screen is installed to screen off foreign matter or oversized lumps which may be present in the cargo during unloading. This screen, which vibrates at a frequency of 3,000 per minute, handles the cement through a cloth of ¼-in. square mesh, and is, in general, a standard heavy-duty unit.



The 4- by 8-ft. vibrating screen installed aboard the "Golden Bay" to eliminate foreign matter and large lumps.

Special guides enable the screen to remain at its correct operating position irrespective of the trim of the vessel. Clamps are also provided to secure the screen while the vessel is at sea. The Fuller-Kinyon pump is powered by a 300-hp. motor, and two rotary compressors are powered by 250-hp. motors. The extraction equipment and pump are designed to discharge at a rate of between 130 and 160 t.p.h. to the shore storage silos, the rate depending on the conveying distance involved. The conveying line to the silos is 10-in. nominal bore.

By running in the reverse direction, the cross screw conveyor is able to deliver coal, when unloaded, onto a portable belt conveyor, which can be slung into position between the ship and the jetty through a watertight door on the port side between the upper and forecastle decks.

All the starters for the machinery are remote-operated, the pushbuttons being mounted on the central cargo control panel in the forward machinery compartment immediately ahead of the hold bulkhead. The control panel is a dead-front panel with selector switches for coal or cement unloading. Provision is made for sequence or individual starting, the latter being used mainly for test purposes. Normally, the starting sequence is electrically interlocked, so that the various motor drives can be started only in the correct order. This procedure insures that all the cargo-handling equipment is running by the time the longitudinal conveyors starts to deliver the cargo from the holds.

Furthermore, each drive is so interlocked with the previous operation that, if it is necessary to stop any particular machinery at any point in the system, all equipment feeding that point is stopped immediately. Subsequent operations continue to work to clear any blockage which may have occurred. The driving motor for the Ward-Leonard motor-generator set and the fields of the generators are also incorporated into this sequence-interlocking system.

For loading cement into the Golden Bay, the MacGregor steel hatch covers are normally kept closed. The cargo is loaded by means of Airslides. Three Airslide fittings are arranged in the port hatch coaming, each filling into either port or starboard hold. Loading of coal into the holds is accomplished by coal chutes from the shore installations, with the hatch covers removed.

American Aggregates

(*From page* 88)

a second 6- by 20-ft. Simplicity vibrating screen that handles only "sink" material over its full, undivided, surface.

Below both of these screens are pans that have two compartments. The first compartment, directly below the receiving end, catches the large volume of bath that flows onto the screens with both the "float" and "sink" products. This media must be recovered in order to maintain a balance in the operating system, as well as for economic reasons. Therefore, the media passing through the first 5 ft. of both screens is piped directly to the media return sump and again circulated by the 6-in. media return pump.

After the "sink" and "float" gravel on one screen, and the "sink" product on the other screen have passed the underlying first pan compartments, they are thoroughly sprayed with clear water to remove the dark-colored media. It is then captured in the second pan compartment below and piped to a wash hopper sump.

From this sump, the diluted bath is elevated by another 6-in. pump to a Jeffrey Manufacturing Company double-drum magnetic separator. The upper drum of this unit has an induced field magnet energized by a motor generator set. Most of the ferrosilicon and magnetite are recovered on this drum. A second (permanent field) magnet is washed by the overflow from the induced field unit and recovers most of the remaining solids. Total recovery of magnetics has been maintained at 99.6 percent. This reclaimed material is then flumed to the lower end of the media densifier which completes the media circuit. Due to constant check and control on operating gravity, loss of media is insignificant —only about .03 of a pound per ton of feed.

Upon discharge from the two vibrating screens, the thoroughly washed but unsized sink product is transported out of the heavy-media building on a 24-in. belt conveyor. It is discharged on sizing screens mounted above three nearby 25-ft. diameter, concrete silos. Five different sizes of products are made within the minus 2- plus ¼-in. range of entering feed. With the silos constructed over a reclaiming tunnel, any one or combination of sizes is obtainable; and in addition, by conveying this upgraded material to the reclaiming tunnel below the finished product bins of the main plant, the latter products can be enhanced through blending.

Of the 300 t.p.h. of raw gravel entering the heavy-media separation system about 80 percent emerges as a high-grade aggregate which the company markets under the name of "Preem-Agg". The remaining 20 percent (float material), which contains a considerable amount of sound material, after being conveyed out of the separation plant, is discharged into a truck bin. Most of this material has been sold for fill purposes; however, some has been hauled to a stockpile area pending experimentation on possible other uses.

The program of expansion and improvement at this plant, which has increased its production almost three-fold in the last ten years, has been largely carried out under the supervision of M. G. Kerr, vice-president and Michigan district manager; L. B. Clark, plant manager; and P. M. Kingsley, assistant plant manager. The heavy-media plant has been largely the concern of J. A. Warren, plant engineer.

These men were able to call upon the able assistance of the company's engineering staff, at the home office in Greenville, Ohio, which played an important part in revising and modernizing the operating design.

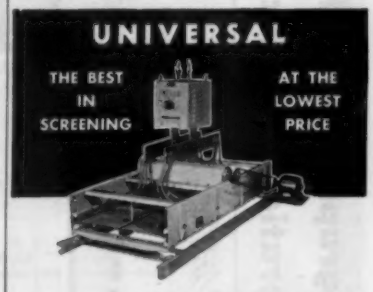
$100,000 Fire Loss Sustained In Slider Corp. Towboat Fire

E. T. Slider, Inc., New Albany, Ind., sand and gravel firm, suffered a $100,000 loss when the 700-hp. towboat, *Mishawaka,* burned and sank in the Ohio River near the mouth of Harrods Creek.

En route from New Albany to Madison, Ind., with her sister ship, *Principio,* the *Mishawaka* was pushing a tow of five empty barges when the fire broke out. Fire extinguishers reportedly were out of order.

Immediately cut loose from tow, the *Mishawaka* headed for shore, where one of her two diesel fuel tanks exploded. Fire-fighting equipment on the boat was used, and a Coast Guard fire crew also fought the blaze, but the boat was destroyed.

At the Bamburi Cement Works in Mombasa, Kenya, maximum output has now been increased to 100,000 tons of cement per year with the opening of a new vertical kiln. This represents a 50 percent increase over the former capacity of the plant. The installation at Bamburi is reported to be the largest vertical kiln in the British Commonwealth.



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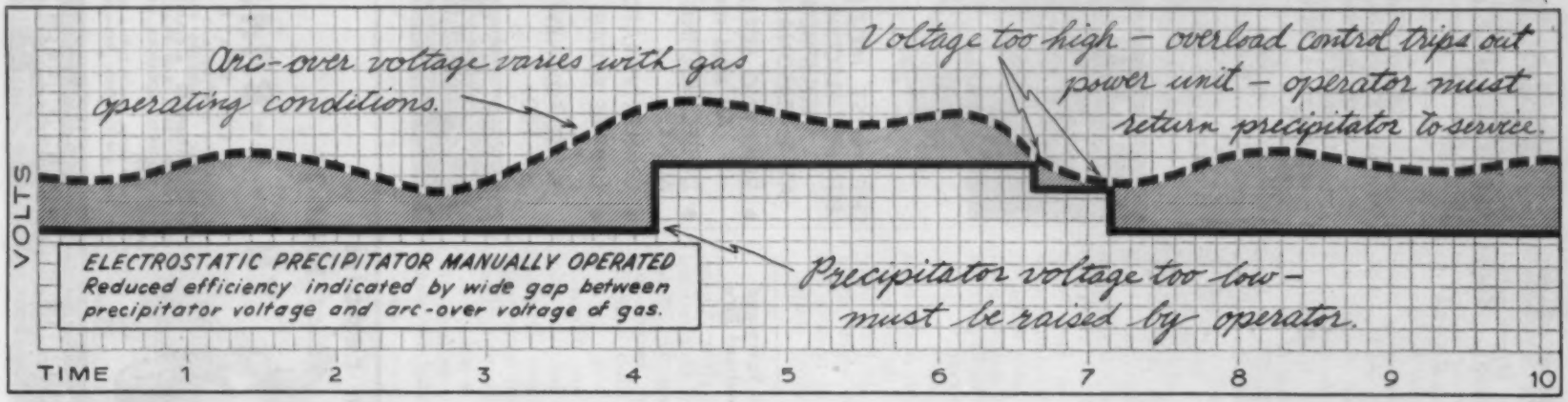
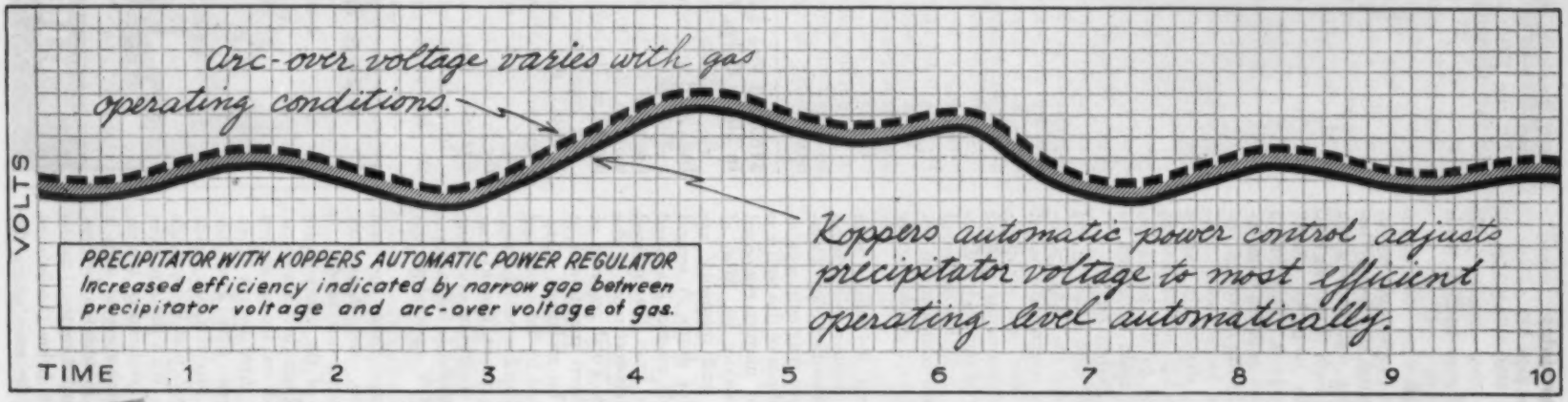
EFFICIENCY GRAPHS: Comparative graphs show the relative difference between MANUAL and AUTOMATIC power operation for electrostatic precipitators


Arc-over voltage varies with gas operating conditions.
Voltage too high – overload control trips out power unit – operator must return precipitator to service.
VOLTS
ELECTROSTATIC PRECIPITATOR MANUALLY OPERATED
Reduced efficiency indicated by wide gap between precipitator voltage and arc-over voltage of gas.
Precipitator voltage too low – must be raised by operator.
TIME 1 2 3 4 5 6 7 8 9 10


Arc-over voltage varies with gas operating conditions.
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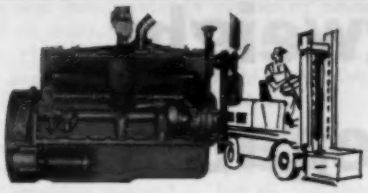

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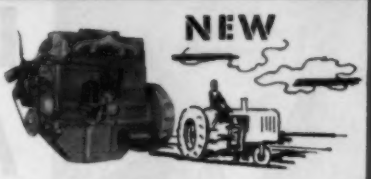

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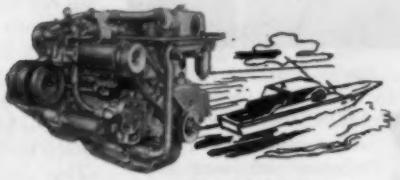

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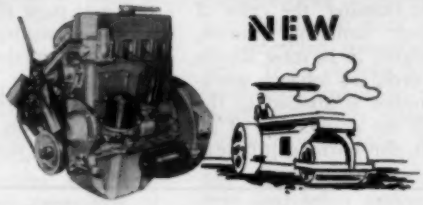

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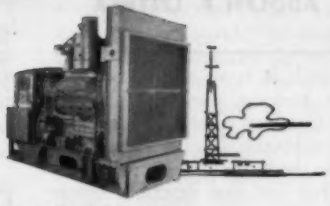

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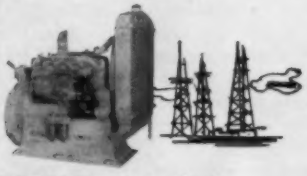

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NOW . . . with the addition of the G O series (Gasoline Overhead valve) and the D D series (Direct injection Diesels), Hercules Motors Corporation offers a most extensive line of piston type engine to meet the varied needs of modern industry.

In addition to the many types of engines illustrated above, it is the policy of Hercules Motors Corporation to tailor engines to the special requirements of their manufacturing customers. Special versions of regular models — for example, "pancake" or flat engines — are often produced for particular applications.

Whatever your power requirements may be, HERCULES — Engine Manufacturing Specialists Since 1915 — will be happy to work with you and solve your power problems. For more information on the new G O and D D series — or any type of Hercules Engine from 3 to 500 H.P. contact the factory.

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Sintering and Lightweight Aggregates

PART I—THE PROCESS

Adolph F. Leitner

By ADOLPH F. LEITNER

MOST of us will probably gain some small measure of satisfaction upon discovering that the word "sinter" is derived from the same Anglo-Saxon word root as the more familiar "cinder", with which it is so easily confused on first hearing. Beyond this, the various standard dictionaries are not even in substantial agreement. Probably the best dictionary definition this author has seen describes sintering as a "fusing without melting". Technical books and other publications, strangely enough, add little by way of a concise explanation. More out of improvisation than authority, then, sintering may probably most satisfactorily be defined as a process for producing a cinder-like agglomerate through incipient fusion.

Contrary to what would seem to be a popular assumption, the sintering process is *not* dependent upon an expanding or bloating action. It involves rather a rapid and brief application of heat sufficiently intense as to cause individual particles of a porous charge material to coalesce or agglomerate into a coherent, homogeneous, cellular structure.

Employed in the metallurgical industry for many years, the modern day sintering technique stems from the invention shortly after the turn of the century by two American metallurgists, A. S. Dwight and R. L. Lloyd, of the *down-draft* sintering process. More recently, the sintering process has been applied in modified form to the field of powdered metals. This latter application, however, should not be confused with the large-scale agglomeration of minerals such as ores, clays, shales, etc., with which this article is concerned.

Down-draft Burning

Down-draft burning, the crux of the down-draft sintering process, may be illustrated in its most simple form by the ordinary tobacco smoking pipe. Ignition is applied at the top, and with the application of an induced draft, the burning progresses downwardly in a relatively thin horizontal zone. This illustration, by the way, is particularly helpful in visualizing the sintering process itself—as will be seen later on.

The inventors of the sintering process noted that optimum burning conditions were obtainable only when the burning material was in a totally quiescent state—free from all possible physical agitation. This condition was most effectively met by the use of down-draft burning, and remains the method most widely employed to this day. The merit of down-draft burning in this connection is probably most eloquently attested to by the pipe smoker, who

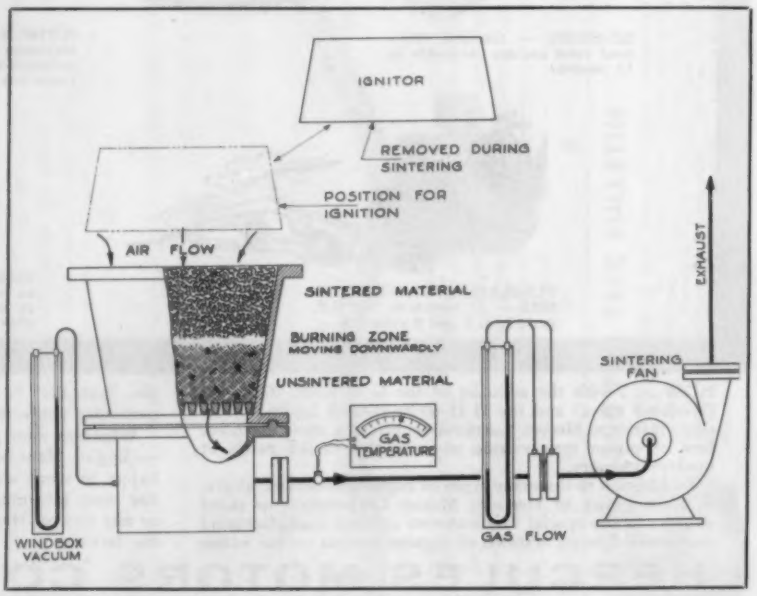

Fig. 1—Sketch of a simple sinter pot for testing materials, illustrating the principle of the down-draft sintering process.

The sintering process for the production of lightweight aggregates has made vast strides since its introduction some six years ago. Yet in many respects the nature and principles of the process and the technology of its application are not widely understood, and very little has been written on the subject. In this article A. F. Leitner presents the essentials of the sintering process. In a subsequent article Mr. Leitner will deal with the practical considerations in planning a commercial installation.

Mr. Leitner, first became associated with the Sintering Machinery Corporation of Netcong, N. J., in 1948, subsequently assuming the post of executive vice-president. He was instrumental in promoting co-operation among producers, a trend which resulted in the formation of a sintered aggregate producers' association. He was also a vice-president of the McDowell Company, Inc., of Cleveland and director of its Dwight-Lloyd Division. He is now president of Netcong Engineers, Inc., Newark, N. J.

for one reason or another (and probably quite inadvertently) has reversed the normal smoking process!

Process Fuel

In the sintering process the required fuel is virtually always a *part of the material charge.* Except for initial ignition, no outside firing is employed. In some raw materials the necessary elements of combustion may already be present. This is true, for example, of certain coal-bearing shales and to some extent of fly ash. In all other cases, and where the elements of combustion already present are inadequate, a solid fuel such as coal or coke in an amount sufficient to raise the temperature of the mix to the point of incipient fusion must be added. Because of the nature of the process, fuels high in volatiles will not ordinarily make for an efficient sintering operation. Under the latter circumstances the volatiles are merely fumed off and expelled in the exhaust air stream without contributing to the necessary generation of heat within the material bed.

The inclusion of the fuel in the material charge points up two significant factors contributing to an understanding of the inherent high B.t.u. efficiency of the process. The first is the resulting complete intimacy of the burning fuel with the material being sintered. The second is the automatic heat recuperation or pre-heating of the lower zones of material as the burning progresses through the bed. (See Fig. 1.) The resulting heat transfer is so effective that it has been necessary in some commercial installations to insulate the piping carrying the exhaust air stream in order to prevent premature condensation of the moisture in the gases.

Bed Porosity

Having covered briefly the principle of down-draft burning and the necessity for an adequate amount of fuel in an intimate mix with the raw material, one vital consideration remains. Lacking this, one might as well go back to smoking the pipe, for all the sinter that will be produced. *The charge material must be porous.* Without adequate bed porosity, or bed permeability (to use a longer word meaning the same thing), the charge material will not sinter—regardless of how much fuel is added or how large an induced draft is employed. This may sound a bit exaggerated—but most assuredly it is not.

Bed porosity may be defined as the sum total of (1) the physical aspects of the material itself, its particle size and form, (2) its preparation, and (3) its physical handling. It is by far the most complex of considerations — yet once properly provided for, it need not be feared as something uncontrollable or erratic. It is obvious in any process involving combustion that an adequate air supply must be present. Furthermore, since the sintering process depends upon the propagation of a uniform zone of heat moving downward through the charge, the air supply must of necessity be able to penetrate evenly over and through the entire bed of the charge material.

By way of illustrating these three considerations, let us take as an example a material such as clay. Unless it is too wet or plastic, clay may readily be crushed to any desired size. For sintering, the clay should be crushed to ¼-in. more or less; and crushed to this size it will be accompanied by smaller pieces down to natural dust sizes. The shapes upon crushing will be irregular, so that the clay will not of itself tend to reform into a compact, impervious mass.

Added to the clay in preparing the charge material are (1) a solid fuel, (2) in commercial installations —a minor percentage of sintered or partially sintered fines, and (3) if required, moisture.

As previously noted, it is usually necessary to add to the raw material a solid fuel such as a low-volatile coal or coke. The required amount will normally be between 6 percent and 10 percent of the raw material by weight. The sizing of the fuel should be minus ¼-in., and finer sizes are also usable. In commercial installations, partially sintered materials are ordinarily separated from the finished product at the conclusion of the sintering cycle and returned for reprocessing.

Being at least partially sintered, these returned fines have a bene-

Fig. 2—A cross-section of sinter cake (sintered clay) before crushing.

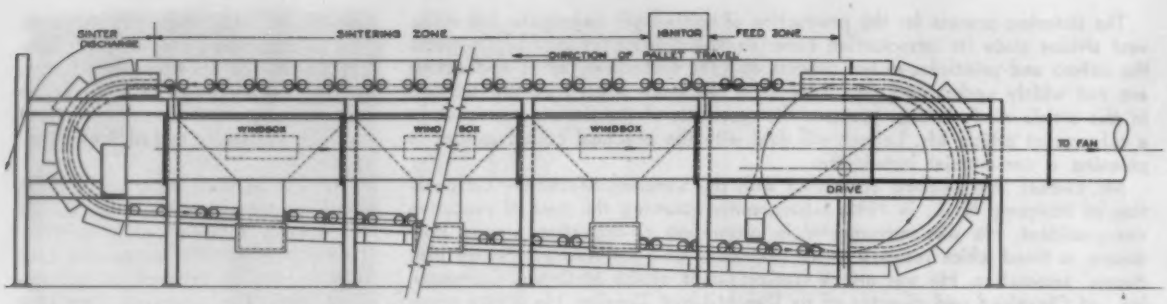

Fig. 3—Sketch of a traveling-grate type sintering machine.

ficial effect upon overall bed porosity. The addition of moisture to the charge is necessary if the materials are so dry that they tend to separate or dust. Moisture appears to have a beneficial effect upon the sintering reaction, as well. For clay materials the amount may be as high as 20 percent and even higher. However, it must not be so high that the charge material will not readily crumble when handled between the fingers. Too high a moisture content tends to compact the material, and, in addition, wastes fuel.

The charge material is usually prepared in a rotary drum-type pugmill, although the regular troughed pugmill or log washer may also be used in some applications. The rotary pugmill, in addition to aerating and mixing the charge components, has the added virtue of rolling the finer particles of materials into small pellets—thus further adding to the overall porosity of the charge.

The charge material is thereupon fed onto the grates of the sintering device. Proper handling of the material, here again, is ever important in preserving porosity. If not properly handled, undesirable segregation of particle sizes may result. If dropped too heavily onto the grates, it will compact. With properly designed feed circuits and an adequate feeding device, however, the all-important porosity will be preserved and in some circumstances even enhanced.

In the case of the firmly consolidated raw materials such as shale, the problem of bed porosity is generally simpler. In the case of very fine free materials such as fly ash, it is somewhat more difficult. The latter requires special preparation techniques.

The Sintering Reaction

What happens when the temperature of the charge material reaches the point of incipient fusion? Some chemical changes do take place—to be sure. But in the generally inert materials such as most clays and shales, these changes are quite nominal. The significant change is in the *physical* structure of the material.

During the intense heat of burning, the individual particles of material start to fuse. However, because of the relatively brief burning period and the cooling air blast which follows immediately upon the burning cycle, there is little, if any, slagging or melting. The original porosity of the bed is retained in the form of countless spherical air spaces, ranging from microscopic pin points to cells an inch or more in size. Most of the smaller air spaces are completely trapped. Many of these trapped cells are generated by the internal pressures resulting from the action of the heat on the moisture, organics, and constituent chemical compounds present within the raw material itself. The porous charge is now a homogeneous "cake" of sintered material. (Fig. 2) after it has been crushed to the desired size, the sinter is ready for use as a lightweight aggregate.

A brief word about the product. Sintered lightweight aggregate is characterized by its high strength and low weight. Along with the expanded clays and shales produced in the rotary kiln, sintered lightweight aggregates are the only aggregate consistently complying with A.S.T.M. specifications for Lightweight Aggregates for Structural Concrete (C330-53T), and with the similar specifications for Lightweight Aggregates for Concrete Masonry Units (C331-53T).

The Sintering Machine

What about the mechanical aspects of the process by which the more than 40,000,000 tons of metallic sinter and 2,000,000 cu. yd. of lightweight aggregate are produced annually in this country alone?

The most simple type of sintering device is that suggested by Fig. 1. Equipment following this basic design is currently employed in some metallurgical operations. Its chief advantage lies in its simplicity. In those operations where relatively small tonnages are required on an intermittent basis, it can be employed to advantage. However, it has also been successfully used in some large-scale metallurgical installations.

Early designs of automatic and continuous sintering machines included the rotary-drum type, the horizontal table type and the traveling-grate type. The rotary drum sintering machine, which functioned in a manner not unlike the present-day rotary-drum filter, has long vanished from the scene. The horizontal table sintering machine has survived to this day, and indeed, at least one lightweight aggregate plant is presently equipped with a machine of this design.

The traveling-grate machine (Fig. 3) is the type by far most widely used in both metallurgical and aggregate producing operations—although in the latter field, the chain-grate type machine, an adaptation of the traveling-grate sintering machine, is also employed.

The traveling-grate machine consists essentially of a series of individual grate-bottomed cars or pallets in a closed circuit, with an ignition furnace on top, followed by a series of suction windboxes under the top horizontal track. The grate-bottomed pallets are activated by a pair of large drive sprockets rotating continuously, which push the pallets in a train over the upper horizontal track. Upon reaching the discharge end, the pallets invert and return by gravity on the lower inclined track to the drive sprocket, where they are again engaged and raised to the upper track to repeat the cycle.

Charge material is fed onto the pallets at a point just beyond the vertical center line of the drive sprockets. The pallets move under the ignition furnace, where the top layer of the charge is ignited, and over the suction windboxes, where the induced draft is applied and the actual sintering takes place.

(*Continued on page* 105)

How this giant crusher changed an industry

● Here's the giant of them all . . . the world's first 4248 overhead eccentric jaw crusher . . . the new PIONEER powerhouse that changed an industry!

Big, tough jobs such as turnpike construction demand *tremendous production* of crushed stone *at the lowest possible cost!* No equipment could completely fill this demand until PIONEER introduced this new 4248 crushing giant. And in filling the demand, it changed the thinking and production methods of the industry.

Big Production With 3 Big Savings

Production demands are much more easily met when you have this crusher on the job. For example, a PIONEER 4248 on the West Virginia Turnpike job crushed rock at the almost unbelievable rate of 700 tons per hour with 100 per cent crushing and a jaw setting of only 7 inches!

But it does a lot more than meet record-breaking production schedules. It results in *three big savings.* It saves the difference in cost between it and expensive *multiple* crushers; it saves drilling and blasting costs because it takes rock up to 40" x 46" in size; and it saves quarry-loading costs because fewer and larger loading machines can be used.

Why Maintenance Costs Are Low

Features which reduce maintenance and down time: box-type, all-welded steel base which gives added strength with over-all reduced weight . . . jaw plates cast of tough manganese steel and designed to absorb cold flow and peening . . . split jaw plates which are reversible for double wear . . . self-aligning anti-friction bearings, precision fit for smooth and lasting performance . . . inner and outer eccentric shaft bearings mounted closer together than on any other anti-friction bearing crushers to lessen shaft strain.

In those cases when maintenance or repair *is* needed, oil pressure expands inner bearing races so bearings slide easily on the shaft if you wish to inspect or remove them. A hydraulic ram holds pitman arm forward when you need to replace toggle plates. Split flywheel hubs make removal and installation simple. You can quickly reverse jaw plates without special tools.

Ask your crusher salesman these questions:

1. Are bearing housings saddle-mounted to assure constant alignment?
2. Is it possible to remove bearings hydraulically?
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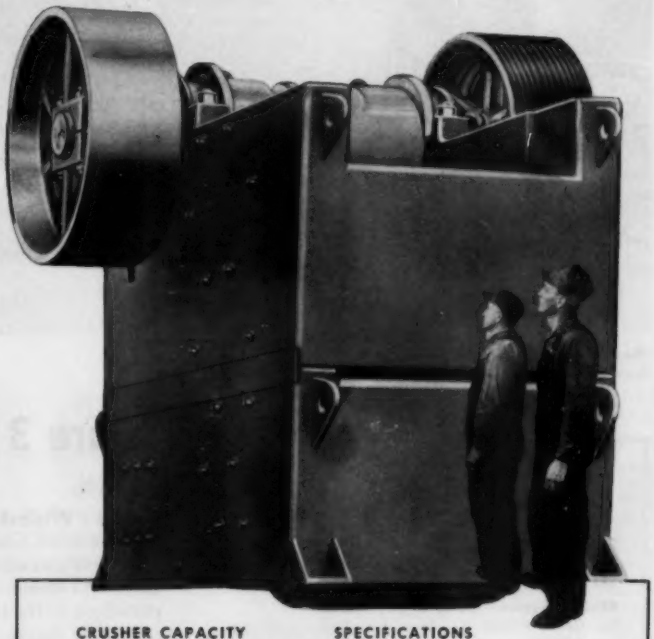
4. Can jaw setting be adjusted by hydraulic means?
5. Can toggle plates be changed with hydraulic assist?
6. Are flywheels provided with split hubs for easy removal?
7. Is crusher made with split base for easy installation?
8. Does crusher have 2 tension rods?



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Field operations indicate that for each inch of jaw opening, capacity increases approximately 100 tph. This rate is with a relatively high crushing percentage. In field installations, production has reached 700 tph with 7" setting.

SPECIFICATIONS

Jaw opening	42"
Width of jaws	48"
Range of setting	5"-12"
Over-all depth, moving jaw	104"
Over-all depth, stationary jaw	90"
Weight (approximate)	94,200 lbs.
HP required	180-210

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More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

FITTINGS for wire rope and chain are shown in the 28-page catalog recently published by the *Thomas Laughlin Division of the American Hoist and Derrick Company*. Included are pictures, engineering data, and charts for each type fitting made by the Laughlin Division. (1)

THE BLACK DIAMOND automatically controlled weight valve bag packer and settler is the most recent model designed by the *Black Products Company*. Electrically operated, the Black Diamond is easy to handle, assures uniform packed bag weight, is clean, trouble free, easily installed, and packs a wide range of granular and powdered free-flowing materials. (2)

MICHIGAN TURBO-DOZERS, manufactured by the *Clark Equipment Company*, are now available in the latest design, the Model 180. Powered by a Waukesha turbo-charged diesel engine the 180 has a two and three-quarter cu. yd. capacity, hydraulic controls, power-tilt bowl, and rubber tire speed and maneuverability. A 20-page booklet describing this equipment is also available. (3)

HYDROSTARTER, the split-second starting unit for diesels in all kinds of weather, is now made available by *Aeroproducts Operations, Allison Division of the General Motors Corporation*. Adaptable to most diesels up to 500 hp. the Hydrostarter has a high static torque of 80 ft. lb. at 3,000 per sq. in. (4)

DIFFERENCES in nuts and bolts are the subject of discussion in a new publication of the *Caterpillar Tractor Company*. "Let's Talk Nuts and Bolts," which describes the material quality, heat-treating, and type of inspection, etc., of nuts and bolts, has been made available for all Caterpillar equipment users. (5)

"DIG," a pamphlet published the *Barber-Greene Company*, depicts the company's complete line of heavy machinery in action. Included are photographs of bucket loaders, conveyors, car unloaders, and ditchers in the Barber-Greene line. (6)

PERMA-PRUF, a liquid integral compound for permanent water proofing, hardening, and intensifying all Portland cement mixtures, is the subject of a booklet made available by the *Concor Chemical Company*. Included are the instructions for using Perma-Pruf, a time-of-set table, and a list of compression test results. (7)

IDLERS for use on all belt conveyors are discussed in a pamphlet released by the *Barber-Greene Company*. Available in all popular belt widths and roll diameters. Idlers protect belts and carriers, prevent material buildup on return rolls, spread material for inspection, picking, or sorting, and keeps belts properly centered. (8)

IRONCLAD BATTERIES for motive power service, manufactured by the *Exide Industrial Division* of the Electric Storage Battery Company, are discussed at length in a recent publication made available by Exide. The booklet shows, in photographs, graphs, charts and editorial comment the efficiency of the batteries. (9)

PORTABLE CORD, POWER CABLE AND WELDING CABLE are the products covered in the three most recent booklets published by the *United States Rubber Company*. The booklets illustrate the many uses of each product which are covered from a technical standpoint, describing their proficiency for individual employment. (10)

PRECISION INSTRUMENTS for industry, pyrometers, thermometers, thermocouples, air velocity meters, and dewpoint indicators, manufactured by *Alnor*, are featured in a new booklet published by Illinois Testing Laboratories, Inc. The various instruments, their application and proficiency are the topics discussed. (11)

SINGLE-ROLL CRUSHERS, made by the *Manufacturers Equipment Company*, are now available in three models. Roll diameters and lengths are 18- by 16-in. to 36- by 60-in. in the 15 Pioneers 18- by 24-in. to 36- by 42-in. in the 13 Black Diamonds; and 21- by 30-in. to 36- by 72-in. in the 15 Rockmasters. The crushers reduce materials in sizes from ¾-in. to 4-in. (12)

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VELOFEEDER, a vibrating feeder made by the Richardson Scale Company, is now in production. Designed to facilitate a steady flow of any loose bulk material into processing machinery, such as grinding mills, pulverizers, mixers, conveyors, the Velofeeder features an electronic synchronizer which enables the operator to match the flow-speed of accompanying equipment, (13)

MODEL 43-MR, most recent development of the *Marion Power Shovel Company,* has been announced as being in production. A 35-ton capacity rubber-mounted unit, new features of this truck crane include dual front axles, power-removable counterweight, 180-in. wheelbase, and full power, operational flexibility and air control. A booklet is available. (14)

THE LATEST ISSUE of *"American Crosby Clipper,"* the two-month publication of the *American Hoist and Derrick Company,* recently came off the press. Included are features on "Steel, Concrete and Piling," and "Construction Equipment." (15)

A CATALOG, entitled *"Pipe Fittings and Supplies for Hydraulic Material Handling,"* has been published by *Mackum Engineering, Inc.* Included in this catalog are the items most common to sand and gravel plants, ash handling, dredging, etc. Sizes and a table of specifications complete the publication.

GYRATORY MOTION machines for screening, sifting, and separating all dry, moist, and liquid materials are now available in the Combs model, made by Great Western Manufacturing Company. Various models for screening, and sifting, are in production. (17)

HEAVIEST LIFTING needs, up to 45 tons, can now be handled by the *American Hoist and Derrick Company's* new 700 Series Truck Crane. Powered by a General Motors diesel engine, the 700 provides greater mobility and smoother operation, with a choice of two-speed transmission or torque converter. (18)

PORTABLE AND EASY to operate, a new wire rope straightener, made by the *Cable Strate Company,* is now available in two sizes, medium and universal. The medium size straightener is for cable ½- to 1-in. while the universal is for ¼- to ½-in. wire rope. Both come with either cast iron or allow bases and weigh from 9 lb. (medium) to 30 lbs. (universal. (19)

TORCON, the torque converter produced by the *Clark Equipment Company,* is fully described in a bulletin issued recently. In all, five models, with hp. ranges from 15 to 600 are now available in 11- to 26-in. diameters. (20)

SNATCH BLOCKS and wire rope clips, products of *American Hoist and Derrick Company,* are the subject of a new bulletin. *Crosby* blocks and clips come in three sizes, 6-, 8-, and 10-in., and are designed for load capacities from ½- to 5-tons. (21)

A BOOKLET describing abrasive separators has been published by the *Pangborn Corporation.* Four types of separators are shown which handle from 33,000 to 320,000 lb. of abrasive per hour. (22)

THE COMBINATION of a centrifugal air attrition impact pulverizer and classifier in a single unit is the most recent design accomplishment of the *Schutz-O'Neill Company.* The *28-in. Superfine Mill* promotes accurate grinding control and even temperatures with its four beater-plates and multi-section liner. (23)

AN 8-PAGE CATALOG published by the *Hardinge Company, Inc.,* describes their latest model roll mill, the *Disc Roll Mill.* Based on the Loesche Mill, developed in Germany, the Disc Roll is particularly suited for grinding soft minerals, such as limestone. (24)

LOG WASHERS, designed to remove clay, soft rock, and refuse from sand and gravel, trap rock, and limestone, are the subject of a booklet released by the *McLanahan and Stone Corp.* Technical details, operational procedures and key dimensions are given in the publication. (25)

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In a posture hardly genteel.
He bought trucks in haste,
Then the costly fact faced,
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If you buy a new truck after looking at only one make, it's like making a deal in the dark. A smarter way to buy is to *"spotlight" real truck* value—weigh and compare competitive claims with these Dodge truck facts:

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GET THE DODGE DEALER'S DEAL BEFORE YOU DECIDE

DODGE
Job-Rated
TRUCKS
WITH THE *FORWARD* LOOK

Preston Sand & Gravel Co.

(*From page 62*)

used on the top deck of this unit to protect the 1½-in. opening screencloth on the bottom section. Material retained on both decks is chuted to an 18- by 36-in. jaw crusher driven by a 60 hp. motor. Reduced through a 1-in. setting, the crusher product is received on the 24-in. crushed stone belt and carried 145 ft. on an 18-degree rise to the top of the plant. Paralleling that conveyor is another 24-in. belt on which the minus 1½-in. throughs are discharged from the bottom deck of the primary screen. This round uncrushed material is then conveyed 140 ft. to its processing screen. Both of the main conveyors are driven by 20-hp. motors.

Three screens are mounted at the top of the plant's steel superstructure. The first—a 4- by 8-ft. double-deck unit—is called the dust screen; it receives only the crushed gravel. Varying opening sizes are used on the top deck, but a 1¼-in. screen is used on the bottom deck.

Material retained on the particular top screen in use is chuted to a following 4- by 12-ft. triple-deck shaker. The plus ¼-in. gravel retained on the bottom deck of the dust screen is chuted to an adjacent 4- by 12-ft. triple-deck screen which also takes all of the material discharged by the round gravel main feed belt. Bottom-deck throughs from the dust screen (minus ¼-in.) are chuted outside the plant onto a dust pile.

The dust screen (No. 1) and the following 4- by 12-ft. unit (No. 2) are driven by 10- and 15-hp. motors, respectively, and are mounted in tandem above one of the two underlying lines of bins. The other 4- by 12-ft. (No. 3) screen is also driven by a 15-hp. motor, and is installed above the other line of bins in the lower concrete structure.

Crushed gravel received on No. 2 screen from the preceding dust separation is washed with water furnished by a 90,000-g.p.m. Barnes pump which, with its 50-hp. motor, is installed on the bank of a ground water reservoir adjoining the plant. Four sizes of crushed gravel are separated on the 1-in. top, ¾-in. middle, and ⅜-in. bottom deck of the foregoing screen, and are chuted to respective bins below.

Material received from the round gravel belt and the plus ¼-in. sizes from the dust screen are also washed on the No. 3 screen and separated on its 1-in., ⅜-in., and ¼-in. top, middle, and bottom decks. The gravel retained on each of these three decks is chuted to the appropriate storage bins. Bottom-deck throughs (minus ¼-in.) however, are flumed along with the wash water from both 4- by 12-ft. screens to a 16-ft. Eagle Iron Works water scalping tank.

From this tank material is supplied to a pair of Eagle Iron 24-in. by 25-ft. single-screw classifiers. One, driven by a 5-hp. motor, is used to process finer sizes (mason sand) while the other, equipped with a 10-hp. motor, produces concrete sand. Both screws are equipped with 15-lb. water pressure bearings which will automatically stop the classifiers in the event of water pump failure. The product of each classifier is discharged into its respective storage bin—the two smaller of the nine compartments below. Overflow from the scalping tank and sand screws is flumed to a worked-out pit area some distance from the plant and returns to the reservoir as ground seepage.

Plus 1-in. crushed stone and round gravel retained on the top decks of No. 2 and No. 3 screens are separately stored in the first bin of each of the two parallel lines. From those two bins this material can be chuted to a 42- by 24-in. double-roll crusher outside the plant and at ground level adjacent to an end pier.

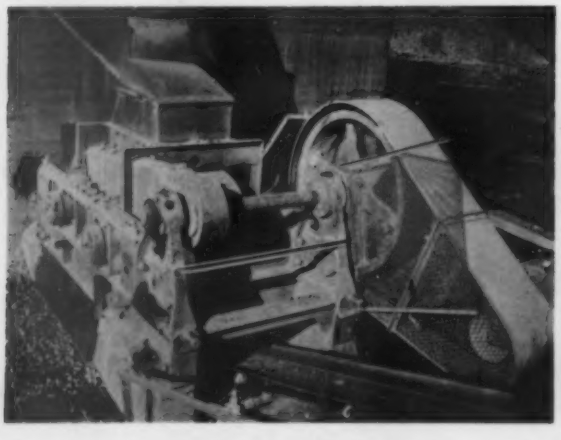
Driven by a 75-hp. motor, this secondary crusher has a minus 1-in. setting and discharges onto a 24-in. by 75-ft. return conveyor that rises between the two main feed conveyors. The secondary crusher product is discharged by the return belt onto the crushed stone conveyor at a point near the tail pulley of the latter unit, and joins the primary crusher discharge being carried to the dust screen at the top of the plant.

All finished material are truck-loaded through gates at the bottom of each bin for delivery or stockpiling. For stockpiling, the products are hauled to the top of a bank adjoining worked-out areas and dumped over the side to the old pit floor. A Michigan loader is used to load trucks for delivery from these stockpiles.

With a regular crew of 14 men operating the pit and plant 10 hours a day over a 5½-day week, Mr. McGovern, assisted by D. Fisher, pit superintendent, and M. Newbiggin, plant superintendent, has developed an efficient 2000 t.p.d. operation—said to be one of the outstanding sand and gravel facilities in Canada—from a very modest original status.

South Korea's largest cement plant is now under construction. An $8,000,000 project of the United Nations Korean Reconstruction Agency, the plant is located at Mungyoung, 85 miles from Seoul.

The secondary crusher which is supplied from the two plus 1-in. material bins.



This front end loader is used to load trucks directly from stockpiles.

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Labor Developments

A Fair Day's Work

By S. HERBERT UNTERBERGER
S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D. C.—Philadelphia, Pa.

THE trouble at Westinghouse, which at this writing is still far from settled, has provided the most startling recent evidence that what constitutes "a fair day's work" and how to measure it remain open questions. While in other establishments the settlement of these questions has not furnished the basis for a long-drawn-out strike, they still constitute continuing sources of irritation and grievances.

Not only do labor and management frequently disagree on these matters, but also within management ranks there is a great lack of unanimity on how they should be handled. This unsatisfactory state of affairs is disappointing, particularly in view of the extraordinary amount of study which has been given to these questions.

Serious work in the field of time and motion study has been going forward since at least the 1920's. In the intervening three decades, the methods have been improved, sharpened up, and elaborated. Labor unions, particularly those in the mass production industries which rose to prominence in the late 1950's, generally started out opposing all work measurement techniques and the wage incentive programs which usually followed such measurement. Over the years, however, many of them learned to operate with these techniques. Many have developed their own time-study and work-measurement specialists.

Nevertheless, on both sides of the bargaining table, an underlying dissatisfaction with the available work-measurement techniques continues. The labor unions are more openly critical. The criticism of the management groups is generally less outspoken and frequently takes the form of a search for more reliable methods.

Until relatively recently the criticisms and the search for improvements dealt with such matters as the best way to establish the amount of work which should be turned out in an hour, or the allowances which should be made for lack of uniformity in the raw materials, or how to handle time lost during machine break-downs, etc. For the most part, they dealt with the measurement techniques. Stop watch methods were developed and improved. Attention was given to improved methods for rating the operators who were subjected to time study. The causes of variations in output unrelated to the operator's expenditure of effort were isolated and eliminated. The objective was to achieve the closest possible relation between the operator's effort, output, and earnings.

While the perfection sought was rarely attained, in many plant situations all of the parties concerned understood the work-measurement methods and their shortcomings and were thereby able to work with them with reasonable satisfaction.

More sophisticated criticisms which pointed to the fact that the samples used for these studies failed to meet certain statistical standards of reliability generally fell on deaf ears. The unusual answer was, "The methods we use may not be perfect, but we understand them and they work."

What, then, is the new force which has again pushed the problem of work measurement into the limelight?

The whole answer is far from known, but recent developments, including the Westinghouse problem, have led many observers of the industrial relations scene to the conclusion that during the post-World War II decade the nature of much factory work has changed. This has resulted principally from the very heavy capital investment in new machinery. Moreover, the relationship of the worker to his machine has changed fundamentally.

Previously *the machine was a device for helping the worker to increase his output.* This relationship still exists in the clothing industries and in many others. Where the worker is the master of his output, the usual work-measurement techniques are fairly adequate for determining a fair day's work and even for establishing a method for determining the amount in excess of this "standard" output for which incentive payments may be made.

Much of the recent capital investment, however, has gone into automatic equipment. Here the role is reversed. *The worker helps the machine produce its maximum output.* A fair day's work for the worker is not necessarily the same as a full day's work for the machine. This fact has led to difficulties. The carefully developed measurement techniques have not worked perfectly in this situation. The objections are frequently overcome by paying so-called incentive pay to assure that the worker will expend sufficient effort, so that the machine will operate reasonably close to its capacity.

However, if only the standard rate is to be paid, the workers are far less willing to accept a method for work measurement. This appears to be a large part of the difficulty at Westinghouse. Obviously much work has yet to be done in developing acceptable work measures in this newer situation.

Before that happens, however, the next phase is in sight—namely, the fully-automated situation, in which the output of the machine is almost entirely independent of worker effort. This will require a completely revised concept of work measurement which will involve further problems. Anticipation of those problems is probably complicating the present situation and making settlement more difficult.

Employment in 1956

Even without any lay-offs from the present high level of employment, unemployment is expected to rise in 1956. This is because about 700,000 new young workers just out of school will enter the labor market and the military forces will be reduced by about 170,000, releasing that many men for civilian employment.

The big fear in 1956 is one of lay-offs, particularly in the automobile industry. This would probably happen even if that industry again made

the same number of cars as in 1955, which, of course, was a record year. Since the models have not changed much, the 1956 cars can probably be made with fewer man-hours expanded than their 1955 counterparts. Any decline in car output is expected to aggravate the situation.

Actually, small declines in automobile employment have already occurred. In themselves, these are not important. As symptoms of things to come or of similar developments in other consumer durable goods industries, they assume great significance. Employment in the automoble industry has become so important a barometer of prosperity that a serious decline is almost certain to shake confidence everywhere. No such serious decline is expected at present.

The best estimates now are that 1956 will probably see no expansion in manufacturing or public utilities employment; a drop in mining and construction; and a rise in government, services, and retail trade employment. Not much of an overall increase or decrease from 1955 levels is expected.

Sintering

(*From page* 96)

The speed of the machine is so regulated that the material is completely sintered through by the time the pallets have passed over the final suction windbox. The sintered material, in the form of a cake, is automatically discharged from the pallets as they invert over the end of the machine.

Because the generation and utilization of the process heat, rather than a function of the machine, is entirely within the material charge itself, the sitnering machine, regardless of type, requires no special warm-up or cooling periods when commencing operations or shutting down. Accordingly, it may be operated intermittently, say for one or two shifts, or continuously—without loss of basic efficiency.

Machine Capacities

Due to wide variations in the sintering rates of different materials, the actual capacity of any sintering machine is really determinable only with respect to the particular material to be sintered. Accordingly, actual machine capacity may most properly be considered to be the product of (1) the active hearth area of the machine and (2) the sintering rate of the particular material to be processed.

The active hearth area of any continuous sintering machine is measured by the total square feet of grate area resting over the suction windboxes at any given moment. For example, a traveling grate machine having pallets containing 6 ft. of grates in width and suction windboxes extending 100 ft. in length is said to have an active hearth area of 600 sq. ft. In this connection, special windboxes are sometimes used for cooling the sinter prior to its discharge from the machine, and these should, of course, be omitted in computing active hearth area.

As previously suggested, it is probably true that no two materials sinter at exactly the same speed. Most clays and shales however, burn in a rate range equivalent to an output of approximately 1.5 to 2.2 cu. yd. of product per sq. ft. of hearth area per 24-hour day. But there are the exceptions—materials which will sinter at rates lower or higher than the range mentioned. Actually, it would hardly be prudent to commit any particular material to a sintering operation without first establishing its sintering rate.

Assuming, then, that a given material will sinter at the 1.5-cu. yd. rate, the actual capacity of the 600-sq. ft. hearth area machine will be 900 cu. yd. per 24-hour day. If the material will sinter at the 2.2 cu. yd. per day.

It is possible, of course, to ascribe some nominal capacity of sorts to any processing device. Moreover, there may well be some variation in the performance of a particular material on one machine, as against another. The important point to remember, however, is that in most cases the actual output capacity of any sintering machine of given active hearth area is not so much a matter of the machine as that of the particular material to be processed on the machine.

Conclusion

The foregoing data on the sintering process and machine are obviously basic and hardly intended to represent a comprehensive exposition of the entire subject. Articles of considerably greater breadth have been written with respect to many of the singular points touched upon—although these have been largely in the metallurgical corner.

It should be clear, however, that the sintering process has the attributes of a high-volume, low-cost operation in the processing of materials — whether metallurgical or lightweight aggregate. In this respect, it is hoped that this article will have served at least as a stepping stone in the approach to a consideration of the problems of a specific application in the still new and uncrowded field of manufactured lightweight aggregate.

(*To be continued*)

Marginal Limestone Studied By Four Kansas Organizations

New ways to process substandard limestone into an economic product, greater use of locally quarried stone, and the development of new sources of material were the problems studied recently by four Kansas organizations. Participating organizations were the Kansas Limestone Association, the State Highway Commission, the Kansas state Geology Department, and the State Geological Survey.

Dwindling supplies of aggregate for use in road building and other construction in Kansas necessitated the project. Chemical and petrographical analysis, methods of screening, the use of substandard limestone for base and sub-base construction, and the study of aggregate processing methods will be discussed.

Costa Rican Government Invites Cement Plant Bids

Bids for the construction of a cement plant are being accepted by the Costa Rican government to exploit large deposits of cement rock found in Agua Caliente on the Navarro River.

The plant concession would be on a 15-year basis, with a guaranteed annual output of 82,672.5 tons of portland cement. Costa Rica would also reserve rights to purchase 50 percent of the plant stock at any time during the concession period.

Costa Rica now imports approximately 66,153 tons of cement annually; but with the country in the midst of a construction boom, future consumption will increase.

Washington News

(*From page* 12)

portance of automobiles in this prosperity is seen from the fact that automobile paper accounted for most of this growth.

The question is often asked whether consumer credit has grown so rapidly that it has exceeded the customers' ability to repay. In its study, the Federal Reserve Board found that repayments of installment loans are taking almost 12 percent of disposable income. This is a larger proportion than ever before, but people are paying their installment debts. Delinquent loans are lower than ever before.

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these are typical KVS installations...they prove

The Kennedy CUBER SENIOR Crushers photographed *on the job* present a *new,* multi-stage, regulated flow impact breaker for primary and secondary crushing. Dual rotor . . . triple action . . . available in portable or stationary models.

This KVS designed Crusher offers the definite advantage of "on the job" use and permits the preparation of aggregates, mile by mile, to reduce costly trucking and to speed up construction. Handles any non-abrasive stone and similar quarry rock that will freely pass the 36" x 48" feed opening.

The only moving parts in Cuber Senior are two identical rotors equipped with cast Manganese steel hammers. Discharge grates reject over-size rock back to the hammers. Grate adjustments control top size of finished material. Variable speed operation produces wide range of aggregate sizes with *full gradation control.*

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MODEL 3648 KENNEDY CUBER SENIOR IMPACT CRUSHER CRUSHING SHALE FOR LIGHTWEIGHT AGGREGATES AT THE PLANT OF HYDRAULIC PRESS BRICK CO.

MODEL 3648 KENNEDY CUBER SENIOR DOUBLE ROTOR IMPACT CRUSHER IN OPERATION AT PLANT OF HEMPT BROTHERS, CAMP HILL, PA.

KENNEDY PORTABLE MODEL 3648 CUBER SENIOR DOUBLE ROTOR IMPACTOR AND FEEDER IN OPERATION FOR CECIL RUBY, NEW BRAUNFELS, TEXAS.

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Dominion Lime Ltd. Obtains Remarkable Gains

in capacity, efficiency of modernized vertical kilns

The Dominion Lime quarry floor at the present location. The 18-ft. bench intervals are visible in the right background.

The stone skip is hoisted up this incline from the raw stone bins to the track on the charging level above the five kilns. Positioning of the skip above the desired kiln automatically opens a door on the top of the kiln to receive the charge.

Another ON THE SPOT Report

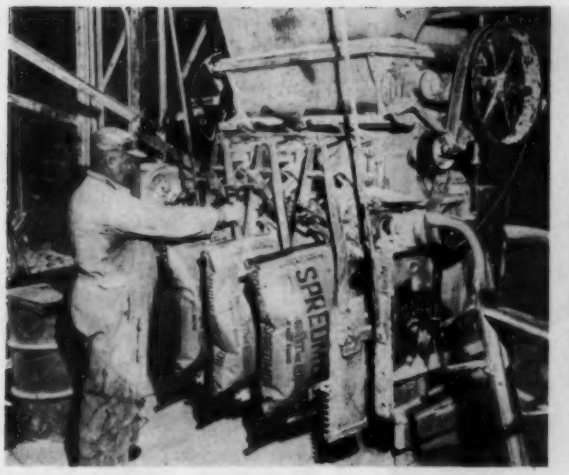
WITH an historical background covering a period of well over a century, the Lime Ridge, Que., operation of Dominion Lime Ltd. has understandably undergone a number of revisions. The latest of these centered

By BUREN C. HEROD

around the redesigning of five old vertical steel kilns—that had had a sporadic operating record over the last 35 years—into their present state of high efficiency and greater capacity.

Modernization of these units was started in 1950; and the project, which included installation of a new gas-producing system, increasing the height of the kiln shells, relining, and installation of a company-designed, electrically-timed and controlled draw system, was essentially complete by mid-1955. As a result, the 8-ton-per-day production from the original shells has been raised to better than 70 tons daily, and the company engineers are confident that a few additional operating adjustments may well result in an ultimate output of nearly 100 tons per kiln.

At about the same time that remodeling of the kilns was initiated, improvements were made at the quarry operation. The latter had previously been conducted with manual loading of rock in the pit and two more handling steps before the rock got to the main plant—this being due to a truck haul from the loading point to a bin in the quarry, and a second haul from that bin to the plant. After acquiring a diesel shovel for direct loading and erecting additional storage for crushed rock at the main plant—a surge bin, in effect—the flow of plant feed from quarry to crusher



A view of the packing operation of one of the quicklime products.

Two of the new gas producers are shown in this firing-floor view.

was simplified, and efficiency was appreciably increased.

The above changes assume even more significance when considered in the light of the earlier history and operations of the company. The plant site and an adjacent abandoned quarry are on property for which deeds dating back to 1803 are still in existence. Operations in the old quarry were started about 1835 by the first owners of the deposit—the former Dudswell Company.

In 1860 the Dudswell company erected five masonry kilns whose lower sections are still standing in the present plant building. A small settlement that grew up around these kilns became the terminus of the old Maine Central Railroad when it was laid through this part of the country as a logging line. A part of that road's right of way is still in use as a spur to the main line of the Quebec Central Railroad, 4½ miles to the east.

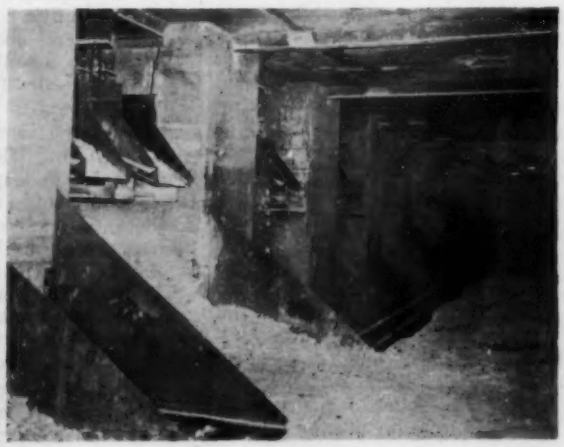
About 1887 the former Dominion Lime Company, which had erected field stone kilns about 3 miles south of Lime Ridge, and was operating in competition with the Dudswell organization, bought out the latter and took over its operations at the present site. With the exception of adding an agstone plant in 1914, no major changes were made to the physical plant or operating methods for production of calcined material until 1920.

At this time the original steel kilns, which were recently renovated, were erected. Ten ft. in diameter, they stood about 30 ft. high and were set on concrete foundations 11 ft. above the draw floor. A central gas producer was installed to furnish fuel for all five kilns. However, the producer system proved unsatisfactory, the steel kilns were almost immediately shut down, and calcining was carried out only in the five old hand-fired wood-burning masonry units.

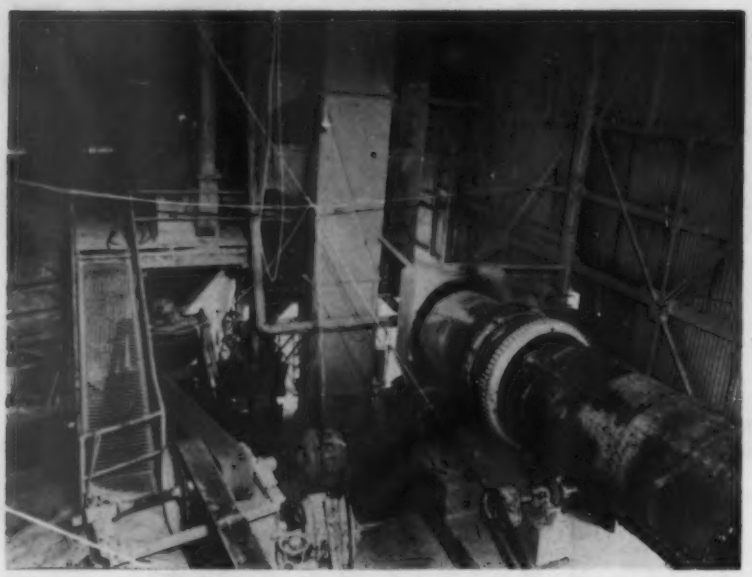
During World War II the steel shells were again put into service to augment the production from the masonry kilns, but not until brick fireboxes had been constructed around each of the steel units to operate these as hand-fired kilns also. With this setup, their individual output was maintained at about 8 tons per day.

Subsequent to the war years, considerable study was made of several possible moves toward realizing a more efficient operation. Among the plans considered was that of modernizing the existing steel units, acquiring newer vertical equipment as replacement, and making a changeover to the rotary method of calcining. It was finally decided, after enlisting the aid of outside consultants, to remodel the existing steel shells; and in 1950 the program, which is now in the final adjustment stage, was started.

These inspection ports seen on the back of the kilns are in the calcining zone.



Automatic handling of calcined material is provided by the pan conveyor recently installed on the draw floor.



Agstone is processed in this separate plant. The 6- by 40-ft. hand-fired dryer is seen on the right.

Some years back the old original quarry was abandoned, after it had reached a depth of almost 300 ft. Owing to extensive folding of the strata, and consequent variation in analysis found over the 2,500-acre area, it was necessary to open a new section about ½ mile to the west of the old workings. The high quality of many areas of this Silurian or Devonian deposit is evident in the ratio of CaO to MgO which has been as high as 229:1[1], and which in current production is probably averaging higher than 95:1.

The present quarry covers an area of about 10 acres to a depth of 55 ft. A small wagon drill and jackhammers are used for primary and secondary drilling, and blasting of 18-ft. benches is done with 40 percent ammonia dynamite. A recently acquired 1¼-cu. yd. Dominion diesel shovel loads broken rock into three Dodge trucks—each of which holds about 7½ tons—for the ¼-mile haul to the crusher hopper at the plant site.

Rock dumped into the hopper, which is on a rise well above the plant building, is transferred by a 48-in. apron feeder to a 28- by 36-in. Traylor Bulldog jaw crusher with a 4½-in. setting. Crusher discharge is sent to a 30-in. belt conveyor by a Jeffrey-Traylor magnetic feeder, and is carried to the primary screen—a 4- by 6-ft. Universal single deck shaker equipped with 1-in. opening screen.

Undersize (minus 1-in.) material is chuted to a belt conveyor and carried to a stockpile from which the agstone plant is supplied. The minus 4½-in. plus 1-in. oversize rock is transported to the top of the raw feed storage building on a 30-in. belt conveyor. At this point it is discharged onto a 4- by 6-ft. double-deck Universal shaker screen and separated into three sizes—4½- by 2½-, 2½- by 1½-, and minus 1½-in. These large, medium, and small sizes are separately chuted to three bins of 700-, 250-, and 150-ton capacities, respectively.

Through swing gates below the two smaller-size stone bins, the rock is discharged directly into a 1½-ton side-dump stone skip. A Jeffrey magnetic feeder below the 700-ton large-stone bin feeds this rock to a transverse conveyor that also discharges into the skip. Spotting of the car below the bins is controlled from the charging level above the kilns. The loaded skip is hauled up a structural steel incline to a track across the charging level.

Positioning of the skip above the desired kiln releases a tripping mechanism that opens a door at the top of the kiln to receive the charge. About 65 loads of large stone are charged into the three large-material kilns each day. The No. 4 kiln, which calcines small stone (minus 1½-plus 1-in.), receives about 40 skip-loads, and No. 5 kiln takes 48 loads of medium stone, daily.

In the original remodeling of these calcining units to Azbe type kilns, they were arranged to operate on the "hang and trim" method. A new producer gas generation system was installed for each, and kiln height was raised to 47 ft. Initially, these changes resulted in raising the production per unit from 8 to about 35 tons per day, with a fuel ratio of approximately 5 to 1. However, subsequent revision by company engineers to the burner and draft systems, changes made in the recirculation of part of the kiln gases to the gas producer, and conversion to the slip principle, have resulted in current production of approximately 70 tons per day from each kiln with a fuel ratio in the neighborhood of 6 to 1. Although the kilns have a diameter of only 10 ft., it is hoped that further adjustment to gas producers and burners will provide for an even higher capacity.

About 45 tons of West Virginia coal is used daily in the gas producers, and the CO thus produced is introduced at about 1,300 deg. F. through ports into the calcining zone of the kilns, where it meets preheated air being drawn up through the cooling zone. After ignition and resultant calcining, CO_2 is drawn off by fans and exhausted to the atmosphere, with the exception of a regulated amount which is recirculated to the gas producers for control of clinkering.

From charge to draw of calcined stone, the cycle covers a period of 24 hours. As a decided improvement over the previously used manually-operated draw gates, reciprocating plate feeders designed by company engineers have been installed. Electrically controlled by a timing system, also developed by the company, these feeders are actuated by pneumatic cylinders at intervals that have been determined during many months of testing as most suitable for effective operation of these remodeled kilns. This provides for the regular drawing of stone by the slip method.

Where the lime was previously drawn directly onto the draw floor and then rehandled by a front-end loader, it is now drawn onto a Jeffrey pan conveyor that was installed in a trough dug in the draw floor along the line of kilns. This pan conveyor transports the lime to a Jeffrey bucket elevator that elevates the material to a stationary screen mounted above a 250-ton 2-compartment bin.

Oversize and throughs from the screen (2½-in. square perforations) fall to their respective bin compartments, from which the plus 2½-in. lump line is drawn for bulk loading of truck or rail shipments. The minus 2½-in. material is drawn from its compartment to a Jeffrey pan conveyor and transported to a Sturte-

[1] *Limestones of Canada Bull.* 755 Part III, Canadian Department of Mines, Mines Branch 1935.

The company hauls rail shipments with this 35-ton diesel electric locomotive over its own 4½-mile spur to the mainline.

Quality control and analyses are established and determined in this laboratory.

vant No. 1½ single-roll crusher that has a ⅜-in. setting. The crusher product is elevated to a transfer point from which it can be diverted through Jeffrey screw conveyors to three points—the hydrate plant, bins from which packers are fed, or the bulk loading point.

At the hydrate department the lime is discharged into a hopper that feeds a Clyde hydrator of 2 t.p.h. capacity. After batch processing, the hydrate is passed through a Raymond air separator, 96 percent passing 325-mesh, and discharged to a hydrate storage bin from which a St. Regis packer is supplied. Rejects of the air separator are recovered and sold for aglime.

The two bagged products of the hydrate operation are known as Bulldog Hydrate, and Adhesive Lime (to which effloresence-controlling chemicals have been added at the hydrator under a licensed process).

At the above mentioned transfer point, a stationary screen with ⅜-in. opening screencloth receives the material destined for the quicklime bagging supply bins. Oversize from this screen is placed in a bin from which it is packed as a pebble lime product. The undersize material is chuted to a bin from which Spredmor—a mason's lime—and Rock City—a waterproof lime—are drawn for bagging. The latter product is a blend of lime and other chemicals also produced under license.

In addition to the foregoing quicklime and hydrate products, the company has for years marketed a high-grade agstone. A separate small plant preparing this product is fed the minus 1-in. crushed rock separated from the main plant raw feed. A reciprocating feeder below the receiving hopper at the agstone plant feeds the rock from the hopper to a 6- by 40-ft. dryer. With wood fuel, the dryer is hand-fired through a firebox at the discharge end.

Dried stone is discharged to a Jeffrey hammer mill, and the milled product is then elevated to discharge over two stationary screens—one fitted with 10-mesh and the other with 55-mesh screencloth. Oversize from these two screens is joined and chuted to a Bradley 3-roll mill. In closing the grinding circuit, the roll mill discharge is transported by a screw conveyor to join the initial feed in the bucket elevator to the two stationary screens.

Undersizes from the latter are chuted to their respective bins, from which the material can be transferred on a belt conveyor to a truck bin for bulk loading or can be fed to a pair of St. Regis packers. The minus 10-mesh material is marketed as aglime and the minus 55-mesh as industrial filler.

Of the 45,000 to 50,000 tons of bagged products produced annually in the lime and agstone plants, the greater part is absorbed by the Quebec City and Montreal markets. Most of the 48,000 tons of bulk material sold is shipped to paper and steel mills. Of the total production, 60 percent is shipped by truck, and the balance by rail. A new 35-ton Whitcomb diesel electric locomotive has been placed in service for hauling over the company's spur from the plant to the Quebec Central Railroad mainline.

Modernization of this operation, which employs a total of 70 men, has been brought about under the direction of J. Alex Stewart, vice-president and managing director; Terry Rourke, general manager; and Robert Pudden, plant manager. The credit which is due these three men was well earned in their successful renovation of a century-old plant to its present high state of efficiency.

Explosives Makers Institute Okays Blasting Instructions

A new, revised list of instructions and warnings on the proper handling and use of explosives and blasting supplies has been recently approved by the Institute of Explosives Makers. The two-color, four-page bulletin lists 72 "Do's and Don'ts" to be observed while transporting, storing, handling, loading or tamping explosives when shooting either electrically or with cap and fuse. Warnings applying to underground work, actions to be taken after firing and explosives disposal are included.

Approved methods for priming an explosive cartridge with both cap and fuse and with electric blasting caps are described and illustrated. Single copies may be obtained without charge from Technical Division, Atlas Powder Company, Wilmington 99, Del.

Clement Brothers Company, Inc., of Lenoir, N. C., recently opened a quarry at Oakvale, S. C., which will be equipped with more than $500,000 worth of crushing and sizing machinery. Products will be used in cement, asphalt, roofing, and construction work, and for construction of the new U. S. Highway 29 between Greenville and Anderson, S. C.

The National Gypsum Company has made a $200,000 educational grant to the University of Buffalo. It will establish the Melvin H. Baker Chair of American Enterprise. Mr. Baker is chairman of the board of National Gypsum.

DIANE—Attractive Name For a Baleful Destroyer

August 19—a silent plant. Alpha Portland Cement Company's office, boiler house, and silos stood in the path of the Delaware's rise at Martins Creek, Pa.

DURING the latter part of last August, the northeastern states came face to face with one of Nature's many facets—her incredible latent power of destruction as so terribly wielded by Hurricane Diane. In many cases during that chaotic period those destructive forces had tragic manifestations; in others lives were spared but great human hardship and property damage resulted. In all cases, man's ineffectual efforts to stay such an irresistible force stood out in pitiful contrast.

But amid the terror and havoc were occasional displays of capriciousness such, for example, as the show the breezy, temperamental Fury from the tropics put on at the Martins Creek, Pa., plant of Alpha Portland Cement Company on the night of August 19.

The plant is located in the Delaware River Valley 8 miles upstream from Easton, Pa. Martins Creek, normally no more than a brook, flows southward through the Alpha property, passing between the processing plant and the nearby quarry from which the raw material for making cement is obtained. A few hundred feet to the south it enters the Delaware, which sweeps westward there in a wide curve before resuming its generally southerly course.

Heavy rains on Thursday, August 18, set the stage for the Delaware's rampage. Friday dawned bright and sunny, belying what was to come, although at 4 o'clock in the morning power failed and 250 electric motors ranging up to 500 hp. in size ceased to function. Kilns that had been producing cement clinker stopped rotating; ball mills grinding clinker and raw materials halted. As the day progressed, the swollen Delaware backed water farther and farther up the creek. At 4 p.m. it topped the rise between the stream and the quarry and went over a wall that had been built in 1903 to hold back the highest previous flood on record. Soon a muddy torrent was pouring in at that point and following the main access road into the pit, ignoring the hurried efforts of workers to block its progress. A little later another and wider stream overtopped the southern rim of the quarry. These are the lower boundaries of the pit, the site of which was originally a hill that sloped from north to south.

The quarry, a roughly oval-shaped depression approximately half a mile long, has been operated continually since 1905. In that time 25,000,000 tons of rock has been removed, representing millions of hours of work by drillers, blasters, shovel runners and truckers. Yet it took enraged Diane just eight hours to fill up the huge hole.

By midnight it was a lake 105 ft. deep in the center, where the floor has been carried some 50 ft. below the general level, and 43 ft. in the shallowest area. Engineers figured that the contents totaled 600,000,000 gallons. The only part of the quarry still visible was the upper section of

Recovery measures were taken almost immediately. Preparation is being made here for installation of pumping equipment. Beneath this now calm surface are six electric shovels, five locomotives, four trucks, a crusher, and a hoist.

Photo by Glenn Bragg

Almost halfway done—on September 13 several pieces of equipment are uncovered and cleaning has already begun. The broken line shows the high-water level.

Photo by Glenn Bragg

the north wall, which rises approximately 230 ft. above the deepest excavation. All the quarrying equipment, including six electric shovels, five gasoline locomotives, four trucks, a crusher, and a hoist, were completely inundated.

The rapid rise of the river—more than twice the rate ever recorded before—was followed by a correspondingly rapid fall. By Sunday morning, August 21, the plant site was free of water. A survey indicated the full extent of the damage—about 250 electric motors damaged by water, conveyors and elevators filled with water, cement-grinding and conveying equipment encased in concrete, and a heavy mass of mud and river debris covering the entire plant on the inside as well as outside.

As the quarry is the sole source of raw material for the plant, and as cement production in the nation is lagging behind demand, it was important to empty the quarry as quickly as possible.

There was only one way of accomplishing this: to pump the water out over the rim, reversing the course by which it had entered. After due consideration of all that this involved, the company decided that it was a job for a specialist, and turned it over to Griffin Well Point Corporation of New York City. Despite the abnormal conditions that prevailed in the wake of the flood, that concern got its equipment in, managed somewhere to scrape up several thousand feet of large-diameter pipe—some of it had originally transported natural gas—and had water moving out on August 26, one week after Nature had turned on her gigantic faucet.

Griffin brought in seven 10-in.-discharge centrifugal pumps, each of 4,000 g.p.m. capacity. Five are driven by diesel engines and two by electric motors. From four to six were used at a time, the others serving as replacements at regular intervals. With 16,000 g.p.m. of water coming out, it was computed that around 45 days would be required to undo what Diane had done in eight hours, and that estimate proved to be substantially correct.

The floor of the upper level reappeared four weeks after pumping was started, and rock production was resumed on September 26, thirty-eight days after the enforced shutdown. Pumping out the deeper part of the excavation, still about 50 ft. down and containing roughly one-third of all the water, was started immediately, the pumps being progressively lowered on a ramp as the water receded. As the lift increased, the output of the pumps fell, but the bottom was reached on October 12 after 47 days of pumping.

Photo by Glenn Bragg

A view of a part of more than 1,000 ft. of screw conveyors from which hardened cement had to be cleaned.

Meanwhile, the tremendous task of getting the mill back in operating condition was in progress on a round-the-clock basis. At the crest of the flood the water was from 10 to 12 ft. deep around the buildings. It came up so fast that the railroad company was unable to move some of the cars that had been loaded with cement for delivery. Cement that was being ground in the nine ball mills had hardened with a 12-in. crust and had to be chipped loose. Finished cement in the bottoms of 34 concrete storage silos likewise solidified.

After the unaffected material at higher levels had been removed, attempts were made to break out the hardened deposit with chipping hammers, but there was so much of it that this method was soon abandoned because it was found to be painfully slow.

Superintendent Charley Burnett solved the problem by drilling a dozen vertical holes into the mass through 12- by 12-in. "top-off" openings in the bottom that are normally used for discharging cement onto a conveyor running in a gallery underneath the silos. These were loaded lightly with dynamite, and after the charges were shot, the material was further broken up with paving breakers.

As the water receded, pools remained at low points in the buildings, and mud and debris were everywhere. Cleanup was accelerated by bringing in a dozen air-operated sump pumps. The water they picked up was discharged through hose lines to flush off machinery and even the floor, thus accomplishing a dual purpose. Drying out the 250 swamped electric motors was started as soon as possible. About 200 of them were trucked to electrical establishments for attention, but many were dried and cleaned in place.

Large space heaters, electric welders, and other equipment loaned to Alpha by other cement companies were used on that job. Four of the heating units directed warm air into a big room to which the smaller motors were brought and where a maximum temperature of 180 deg. F. was built up. The other heaters were utilized in tunnels and at other locations to dry large motors which could not be readily moved.

Following these operations all motors had to be returned to operating position. Fifty-four separate electrical circuits had to be cleared and dried before the return of power. With some circuits carrying as high as 2300 volts, this part of the recovery operation was necessarily a painstaking and time-consuming job. All electric control equipment for the motors had to be cleaned, dried, and replaced.

Less than three weeks after the flood came the plant was back on a partial schedule making clinker from rock that had been stockpiled. The clinker was stored pending later grinding.

Full capacity operation of the mill, which with an annual production of 2,200,000 barrels of cement is the largest of the company's facilities, was resumed by October 1. This plant was headed towards the best production year in its half-century history when Diane stopped it abruptly with a vigorous slap of her decidedly moist hand.

The background of effort expended by company personnel in restoring the plant and equipment is best summed up in the following statement by management: "The one bright aspect of this costly and ruinous occasion has been the reaction and performance of the operating personnel during this period of recovery. Every individual in the plant organization has worked steadily and willingly, not fazed in any way by the muck and mire encountered in every phase of the work. Morale of this type is seldom matched and can not be exceeded. The Alpha management wishes to pay tribute to all the members of a fine organization."

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International Harvester Company, Chicago 1, Illinois

INTERNATIONAL® DROTT

State Highway Construction—Review of 1955 and Plans for 1956

By JAMES G. KOSTKA

HIGHWAY construction represents a respectable portion of our total national construction. In 1955 it amounted to $4,100,000,000, or 9.8 percent of the total. Expectations are even greater for this type of construction in 1956. Total new construction is expected to reach $44,000,000,000, and highway construction will reach the $4,600,000,000 mark, or 10.2 percent of the anticipated total.

Because the highway construction plans of each individual state or group of states are of interest to many nonmetallic mineral producers in a particular area, it was felt that each state should be contacted and asked what their highway construction was in 1955 and what their plans are for 1956. This was done by requesting the following information:

1. Miles of road completed in 1955
2. Type of surfacing on these roads
3. Cost of these roads
4. Repair work done in 1955
5. Road program for 1956
6. Any pertinent information on material shortages, equipment shortages, etc.

We had planned to include the state replies in the Review and Forecast Section of our January issue, but this plan had to be dropped when we learned that a number of states which wanted to supply this information would not be able to do so until after the first of the year. Some states did not reply. Other states wrote and said their fiscal year ended in some such month as March, April, or May, therefore, the information would not be available until then. But there was a good representative group that did reply, and we are happy to list their comments below. It is apparent that they were all engaged in big highway construction programs in 1955 and are planning even bigger programs in 1956. This is heartening because even though we are at a record level for this type of construction we are still far short of total requirements. This increased pace must be maintained if we expect to gain ground on this much needed construction. It is estimated that we will have to double the current rate of highway construction for the next ten years before we will be able to meet our basic needs. The only way this can be done is by each state providing the highway construction it needs to handle both its inter-state and intra-state automobile, truck and bus traffic efficiently. When this has been done by all of our states we can then consider our national highway system adequate.

ALABAMA

1. The State of Alabama participated in the paving of 1,413 miles of roads during the fiscal year October 1, 1954 through September 30, 1955.
2. All of the paved mileage is bituminous with the exception of one (1) mile of concrete.
3. Total expenditure for construction during the fiscal year 1954-1955, including roads under construction, was approximately $46,500,000.
4. There were seven (7) miles of bituminous surface placed; 875 miles of seal coat applied; 569 lineal feet of bridge betterment and other miscellaneous repairs during the fiscal year 1954-55.

Joseph W. Hurt,
Chief of Planning Survey

ARIZONA

1. Miles of road completed in 1955—205.
2. Type of surfacing on these roads—Mixed bituminous.
3. Cost of these roads—$18,000,000 est. (1955 Constr. Expend.)
4. Repair work done in 1955—$4,250,000 est.
5. Road program for 1956—Approx. $20,000,000.

Division of Economics and Statistics

CALIFORNIA

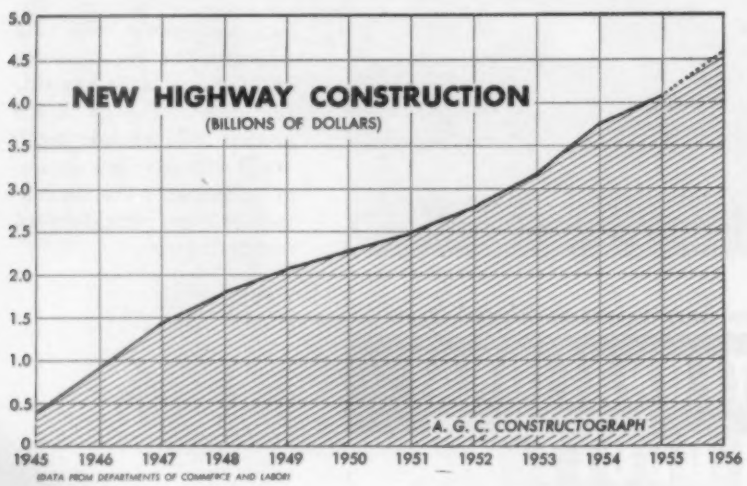
Since our records are kept on the basis of a fiscal year which begins July 1, it is not possible to supply you with the desired information for the calendar year 1955. Accordingly, the data which are supplied below in answer to your first four questions are necessarily based on the fiscal year beginning July 1, 1954, and ending June 30, 1955.

The answers to your numbered questions follow:

1. (Miles of road completed). During the fiscal year ending June 30, 1955, the Division of Highways awarded a total of 592 contracts covering work on 2,201 miles of road, of which 1,969 miles were State Highway and the remainder county and other roads. These contracts included grading and seal coat jobs as well as paving.

2. (Type of surfacing). The foregoing contracts called of 117 miles of portland cement concrete paving and 1,346 miles of plant mix and road mix surfacing.

3. (Cost of these roads). The construction value of the 1954-55 contracts amounted to $156,637, 200 on state highways, $11,141,800 for Federal Aid Secondary county roads and $6,651,900 for maintenance-type work, a total of $174,430,000.



Right of way acquisition for state highways during the same period cost $89,346,000.

4. (Repair work done in 1955). Total state highway maintenance expenditures for the 1954-55 fiscal year amounted to $23,614,000, including the major categories of maintenance and repair ($17,403,000) and traffic service and safety devices ($4,474,000).

5. (Road program for 1956). There is enclosed a copy of the news release issued at the time the State Highway Budget for the 1956-57 fiscal year was adopted. Your attention is called to the fact that although the fiscal year begins July 1, 1956, contracts may be awarded as early as January 1, 1956, and a number of major jobs have already been advertised for bids.

6. (Information about shortages). We know of no significant problems of shortages in either material or equipment.

G. T. McCoy,
State Highway Engineer

COLORADO

1. (Miles of road completed in 1955). All the completion reports are not in but they will approximate the total of contracts awarded during the calendar year, which includes 150 projects, 500 miles of highway at a cost of $29 million—the greatest construction year in the Department's history.
2. (Type of surfacing). Approximately 500 miles; 456 asphaltic, 30 gravel and 14 portland cement concrete.
3. (Cost of these roads). $29 million.
4. (Repair work done in 1955). Approximately $450,000, under a special "betterments" appropriation in addition to major construction and regular maintenance.
5. Allowing for a reasonable increase in gasoline tax and other state fees, the construction budget for the calendar year of 1956 should be approximately $38 million, a slight increase over the $37 million construction budget for the present fiscal year.

We find that steel is in short supply. On some orders placed recently we have been informed that delivery cannot be made until next August.

Mark U. Watrous,
Chief Engineer
by
Wallis M. Reef,
Director of Public and
Intergovernmental Relations

CONNECTICUT

We have obtained sufficient data to enable us to answer most of your questions. Here is the information you requested.

Miles of Paving—1955

Mileage	Type of Paving	Cost (Estimated)
0.5	Bit. treated gravel	$ 62,400
1.7	Bit. Penetration	307,900
4.8	Bit. Concrete	564,400
1.2	Portland Cement Conc.	341,600
8.2		$1,276,300

We have not included flood repairs, bridge projects, jobs involving grading only, armor coat resurfacing performed by our own maintenance forces and any Connecticut Turnpike projects. These account for several million dollars more, but the road projects are still in progress and the bridge projects do not involve paving.

Our estimated expenditure maintenance work in 1955 is $13,000,000.

It is anticipated that contracts amounting to $150,000,000 will be awarded in 1956. Of this total about $100,000,000 will be for work on the Connecticut Turnpike.

Newman E. Argraves,
State Highway Commissioner
by
W. C. Murray,
Executive Assistant

ILLINOIS

Type of Construction	Unit	Total Completed in 1955
Portland cement concrete pavement	Miles	109.84
Bituminous concrete resurfacing on existing portland cement concrete pavement	Miles	223.01
Portland cement concrete widening and full-width base course (separate contracts performed prior to resurfacing existing portland cement concrete pavement with bituminous concrete)	Miles	82.25
Bituminous surface treatments on gravel, crushed stone and soil cement bases	Miles	451.77
Intermittent bituminous concrete surfacing on existing portland cement concrete pavement	Sq. Yd.	2,214,252
Grading—separate contracts	Miles	23.98
New bridges	Number	107
Bridges widened	Number	23
Highway and railroad grade separations	Number	29
Bridges painted	Number	53

Expenditures for construction including right-of-way costs will total about $96,000,000 in 1955.

The Division of Highways expended approximately $25,155,000 during 1955 in maintenance and traffic operations of 14,300 miles of rural highways and 2,026 bridges having a length of 100 feet or more. In addition, the Division was responsible for the maintenance of 605 miles of city streets, beltlines and bypasses used as marked State routes, at a cost of approximately $515,000.

The State primary construction program for 1956 will total $127,305,000, and provides for construction of 659 miles of highways including 192 miles of new pavement and resurfacing 405 miles of existing highways. The program includes the construction of 89 new bridges, widening 54 others, and building 45 new highway and railroad grade separations. Included in the program is an allocation of $21,180,000 for the metropolitan expressway system in Chicago and Cook County and $11,829,000 for acquisition of rights-of-way on 1,223 miles of highway.

E. A. Rosenstone,
Director
Dept. of Public Works
and Buildings—
Division of Highways

MAINE

1. (Miles of roads completed) 375 miles, including State Aid and Special State Aid, but not Town Road Improvement.
2. (Types of surfacing)
   208 miles—surface treated gravel
   40 miles—bituminous gravel
   48 miles—bituminous macadam
   79 miles—bituminous concrete
3. (Cost of these roads) $18,320,000
4. (Repair work done)
   Summer Maintenance—
   9,732 miles $6,643,000
   Winter Maintenance—
   15,730 miles $4,131,000
5. (Road program for 1956) 304 miles—$13,000,000

Vaughan M. Daggett,
Chief Engineer

MICHIGAN

Construction amounting to approximately seventy-five million dollars for roads and bridges was completed during the 1955 season. This program involved the following mileage of the various types of surfacing:

Gravel Surfacing ..... 132 miles
Bituminous Sealcoats ..... 519 miles
Bituminous Surfacing (mat) .. 307 miles
Concrete Pavement ..... 78 miles
Concrete Pavement Widening .. 33 miles

The construction program for 1956 has not been formulated in detail but we are anticipating an expenditure of approximately $120,000,000 for road and bridge construction.

We expect that some construction materials, such as portland cement and structural steel, may not be readily obtainable for our expanded construction program in 1956.

H. J. Rathfoot
Construction Engineer

MONTANA

Below is a tabulation of the projects that were completed during 1955, and those planned for 1956.

PROJECTS COMPLETED—1955

Type of Road	No. of Projects	Mileage	Total
Interstate	10	63.17	$ 1,580,682
Urban	7	5.19	659,791
Primary	37	306.55	6,524,530
Secondary	37	208.92	5,420,192
Maintenance	14	....	633,493
GRAND TOTAL	105	583.83	$14,818,688

For your question No. 4, Special maintenance amounted to $211,347 and Maintenance Betterments to $1,008,085.

The information with regards to the planned construction program for the calendar year 1956 is as follows:

1) **MAINTENANCE AND MAINTENANCE BETTERMENTS**		
State Funds only		$6,900,000
2) **CONSTRUCTION WITH FEDERAL AID**		
(Estimated Contract Costs)		
a. Interstate Highway System 60 miles. Grade, drain, lesser bridges, gravel surface and bituminous surface treatment	$4,000,000	
b. Primary Highway System		
1) 160 miles. Grade, drain, lesser bridges, gravel surface and bituminous surface treatment	$7,800,000	
2) 60 miles. Additional Gravel Surface and plant mix pavement	$ 600,000	
3) Major structures, including: Missouri River Bridge between Grass Range and Malta; Yellowstone River Bridge at Forsyth; Yellowstone River Bridge at Glendive; Clarks Fork River Bridge at Missoula; and four miscellaneous Railroad Grade Separations Projects	$3,300,000	
c. Secondary Highway System		
1) 120 miles. Grade, drain, lesser bridges, gravel surfacing and road mix oil		
2) 72 miles. Grade, drain, lesser bridges, and gravel surface	$1,800,000	
d. Urban Construction		
1) 10 miles. Grade, surface, drain, plant mix pavement, concrete curbs and gutters	$1,200,000	
Sub-Total—Construction		$24,000,000
Grand Total—State Maintenance and Federal Aid Construction		$30,900,000

In addition to the work listed above which is planned to be placed under contract during the 1956 calendar year, there will be a carry-over of uncompleted work now under contract which will be completed during 1956. The money value of this carry-over will be approximately $17,000,000.

It will be appreciated that the 1956 construction program, as roughly outlined, does not take into consideration the probably enactment by the Congress of the much debated Interstate Highway legislation with its more favorable matching ratio to the states.

In the event that such legislation is enacted early in 1956, and further provided that the increased Federal Aid for the improvement of the Interstate Highway System is made available without undue delay, the highway construction program for Montana will be increased accordingly. The increase granted that the legislation and the appropriations become effective on July 1, 1956, would be from $4,000,000 to $10,000,000, for Interstate Highway construction in Montana during the 1956 calendar year.

Scott P. Hart, State Highway Engineer
By S. B. Sanders, Construction-Engineer

NEBRASKA

CONTRACTS AWARDED—1955

	State Maint		Not State Maint.	
Type of Surface	Miles	Dollars	Miles	Dollars
Gravel	129.80	$2,484,619.72	139.40	$ 895,341.19
Bit.	340.70	9,812,004.27	56.00	944,306.66
Pav.	106.30	7,994,512.01	8.00	1,942,298.26
	576.80	$20,291,136.00	203.40	$3,781,946.11

C. Cecil Eloe, Chief, Information Section, Dept. of Roads & Irrigation

NEW HAMPSHIRE

In 1955 we completed construction of 29 miles of road mix, 9 miles of surface treated gravel, 3 miles of plant mix asphalt, and 24.6 miles of our 4 lane divided turnpikes (toll), with road mix surface and we resurfaced 193 miles of highway with asphalt and peastone at a cost of $16,472,700.

Repair work done by our maintenance forces in excess of regular maintenance amounted to about $230,000.

Our road program in 1956 will equal or exceed 1955 both in length constructed and cost.

In this area we have been troubled by the cement shortage and the current steel delivery is about 9 months, sufficient equipment has been available.

F. J. Auer
Planning & Economics Engineer

NEW YORK

There were accepted during the 1955 calendary year, 354.20 contract miles of highways, constructed at a bid price of $75,019,109.

260.59 miles were of bituminous type, 74.78 miles of concrete, and 18.83 miles of miscellaneous type.

Repair work completed in 1955 is not available at this time.

The road program for 1956 is also not available at this time.

We do not have any information on material or equipment shortages.

The above information does not include any work done by the various authorities in New York State.

B. A. Lefeve, Acting Director
Bureau of Research & Statistics
Dept. of Public Works

NORTH CAROLINA

Modern highway operations are difficult to express in "miles of road completed" in a given year. Major highway work is in the nature of improvements, remodelling and modernization. Furthermore, it usually takes two or three years to "complete" a given mile of major work. Then too, vast mileage of existing roads are resurfaced, retreaded, retreated and/or widened—rather than being built and completed. For these reasons, coupled with the short time permitted us, we can give you little information in the terms desired. Perhaps the following will be of value:

In terms of Primary Highway construction expenditures, 1955 has been our busiest year in history. During the year, contract construction projects on Primary and Secondary Systems will aggregate more than $50 million, including right-of-way and engineering costs. During 1955, more than 1600 miles of Primary Highway Construction has been active. Special emphasis has been placed on expensive major Interstate routes, and on other expressways. In recent years, over 215 miles of 4-lane highways have been completed, and another 100 miles are in the construction stage.

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Another $60 million has been spent in 1955 on maintenance, minor improvement, resurfacing and widening on our 70,000 mile system—the longest under the jurisdiction of any state in the nation. Such work involves a great tonnage of crushed stone.

For 1956, it appears that our operations will be even more extensive. Due to growing motor vehicle registration, gasoline consumption, and a sizable carry-over balance of available funds, our 1956 construction should surpass 1955 by several million dollars.

James S. Burch
Engineer of Statistics and Planning

NORTH DAKOTA

The following is the best information available at this time:

1. Miles of Road Completed in 1955
   Placed under Contract in 1955 ..... 862.34 Miles
2. Type of Surfacing on these Roads
   Gravel Surfacing ..... 415 Miles
   Bituminous Surfacing ..... 438 Miles
   Concrete Pavement ..... 9.34 Miles
3. Cost of these Roads
   Total Contract Cost $15,240,287.00
   Plus 10% for Engineering & Contingencies 1,524,029.00
   Total Construction Cost 16,764,316.00
4. Repair Work Done in 1955
   Approximate Total Expenditures for Maintenance in 1955 ..... 4,000,000.00
5. Road Program for 1956
   Anticipated Construction for 1956 ..... 17,000,000.00
   Anticipated Maintenance for 1956 ..... 4,000,000.00
6. We do not have any information as to any shortages of material or equipment.

In addition to the above work on the State System the various Counties expended $3,124,808.00 for 571.7 miles of grading, 493.4 miles of gravel surfacing, 0.5 miles concrete paving, 0.7 miles bituminous surfacing and structures of the County Federal Aid Secondary System.

The anticipated expenditures on the County Federal Aid Secondary System for 1956 will be $3,200,000.00.

Erling Henrickson,
Asst. Construction Engineer

OHIO

In answer to your questions concerning 1955 Highway construction program and anticipated 1955 Highway construction program, we offer the following information:

1. Miles of Highway Completed in 1955.
   It is estimated that 500 miles of new construction will be completed in 1955. However, this is an estimated figure due to the fact that the 1955 program is not completed.
2. Type of Surface on These Roads.
   Usually, the Ohio Department of Highways uses portland cement concrete and asphaltic concrete.
3. Cost of These Highways.
   It is estimated that our 1955 construction highway program will be $174 million. It should again be noted that this is estimated.
4. Repair Work Done in 1955.
   No accurate answer to this question can be given until the middle of January, 1956.
5. Road Program for 1956.
   It is estimated that the Ohio Department of Highways will spend $215 million for new highway construction in 1956.
6. Any Pertinent Information you may have about Material Shortages, Equipment Shortages, etc.
   At the present time, there is no shortage of material or equipment in Ohio, except structural steel.

Alan F. Reeves
Chief Public Information

OREGON

We might say that our 1956 program is dependent largely upon what action is taken by Congress in the matter of Federal Aid. If no Federal Aid should be authorized for the fiscal year 1958, our contracting during 1956 will be limited to about $12,000,000 and our construction expenditures for the year to about $30,000,000. A Federal-Aid authorization released for contracting in July or August would not materially affect our construction expenditure for the year, but might enable us to add $10,000,000 to $20,000,000 to the amount we will contact.

R. H. Baldock
State Highway Engineer
By W. C. Williams
Deputy State Highway Engineer
State Highway Department

RHODE ISLAND

1. Miles of road completed in 1955: Approx. 31
2. Type of surfacing on these roads: 9.4 mi. reinforced cement concrete, 21.7 mi. bituminous concrete on macadam base
3. Cost of these roads: Approx. $7,000,000
4. Repair work done in 1955: Maintenance operations, approx. $2,500,000
5. Road program for 1956: Roads and bridges, approx. $16,000,000

G. H. Henderson
Principal Highway Engineer

SOUTH CAROLINA

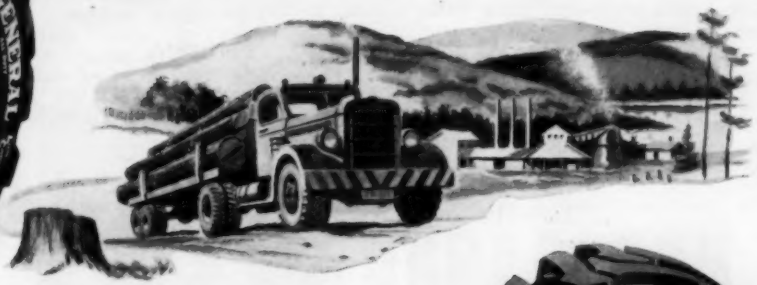
Highway and bridge construction projects involving expenditures of a possible $30,000,000 have been scheduled by the State Highway Department for 1956, Chief Highway Commissioner Claude R. McMillan has announced. Major emphasis will again be placed upon the improvement of the state's arterial highways as was done during 1955.

Reports of highway progress for the past year and a forecast for the new year indicate an increase of as much as $4,000,000 in the cost of anticipated 1956 projects over those of 1955. The possibility of increased Federal Aid for highway purposes could result in even greater construction expenditures.

Road and bridge construction contracts awarded and approved by the Highway Commission for award during 1955 totaled approximately $24,000,000, the Department's report reveals. An additional $7,902,382 was expended for the ordinary and extra-ordinary maintenance of existing highways. Also, retreatment of worn pavement by contract cost a total of $2,639,766, and shoulder treatment cost $90,521.

Emphasis during 1956 will be increasingly upon primary highways. Progress in modernizing arterial routes, however, comes more slowly than in bringing the secondary roads up to date. Chief problems encountered in primary road improvement are the great increased cost of construction and right-of-way acquirements. The average cost per mile of secondary road construction during 1955 was $10,430.53. Primary highways, on the other hand, cost an average of $35,657.69 per mile to $105,653.15 per mile, depending upon the location. In urban areas,

Operating costs go down when GENERALS move in!



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the cost has often exceeded $1 million per mile of construction.

The South Carolina Highway Department, Columbia, South Carolina

SOUTH DAKOTA

The South Dakota Department of Highways awarded contracts on 770 miles of improvements on the State Trunk System during 1955.

The work includes 204 miles of new grade, 560 miles of bituminous, and 6½ miles of concrete pavements. The total contract price was $18,085,000.

The work programmed for 1956 includes 800 miles of construction valued at approximately 22 million dollars. It is doubtful that more than two-thirds of this work will be brought to contract during 1956.

C. P. Jorgenson
State Manager

UTAH

1. During 1955, 183 miles of highway have been completed under contract.
2. Type of surfacing on this mileage is as follows:
   - Gradings and Drainage.....26 miles
   - Road Mix Bituminous Surfacing .....81 miles
   - Plant Mix Bituminous Surfacing .....76 miles
3. The total cost of this mileage is $7,440,900 (contract amounts). In addition to the cost of completed roads, we have under contract but not completed at the present time projects totaling $10,760,000.
4. We do not have figures available at the present time covering the amount of repair work done by our maintenance forces during 1955.
5. Detailed construction program for 1956 has not been completed up to date; however, it is estimated that we will have approximately $15,000,000 available for construction purposes during the 1956 construction season.

E. G. Johnson
Chief Engineer
by
O. Donald Miles
Chief Designer

VIRGINIA

1. There were 388.9 miles of road completed in Virginia in 1955.
2. The type of surfacing on these roads is as listed:

PRIMARY SYSTEM

	Miles
Reinforced Cement Concrete Pavement	7.749
Plain Cement Concrete Widening, Bituminous	3.212
Bituminous Concrete Pavement	55.818
Water Bound Macadam. Bituminous Top	2.859
Graded Aggregate, Bituminous Top	6.195
Soil Aggregate Base, Bituminous Top	48.000
Graded and Drained	2.917
Cement Concrete Curb, Gutter and Sidewalk	.879

SECONDARY SYSTEM

Reinforced Cement Concrete Pavement	1.805
Bituminous Concrete Pavement	0.795
Graded Aggregate, Bituminous Top	8.792
Soil Cement, Bituminous Surface Treated	11.210
Soil Aggregate, Bituminous Surface Treated	143.581
Soil Aggregate Base	71.750
Crusher Run Stone, Bit. Surface Treated	9.347
Crusher Run Stone	5.437
Bituminous Surface Treatment	6.479
Cement Concrete Curb and Gutter	2.087

3. The cost of construction of these roads was $33,000,000.
4. The repair work for the fiscal year ending July 1, 1955 amounted to $6,267,152.91.
5. Projects put under way, plus those carried over from 1955, are expected to increase the 1956 highway construction program in Virginia by about 10 percent. Emphasis on four-lane construction on the most heavily traveled highways will be continued.

H. L. Smith
Director of Public Information

WASHINGTON

1. Miles of road completed in 1955 — State Highways — 932 miles. County Roads and City Streets —361 miles.
2. Type of surfacing on these roads —Surfacing Contracts awarded July 1, 1954 through June 30, 1955:

Grade and drain	29.
Grade and surface	207.
Crushed stone surfacing	14.
Cement concrete	28.
Asphaltic concrete	13.
Bituminous surface treatment	240.
Non-skid single seal treatment	638.
	1293

3. Cost of these roads—Not complete, so no final costs available.
4. Repair work done in 1955 — Routine maintenance and extraordinary maintenance.

W. A. Bugge
Director of Highways
by
Donald M. Brown
Public Information Officer

WISCONSIN

Wisconsin's State Highway Commission reports that 1,032 miles of roads were placed under contract for surfacing during 1955. Of this total about 80 miles were surfaced with portland cement concrete, a half mile with sheet asphalt, 337 miles with single aggregate bituminous plant mix, 383 miles with bituminous concrete and 265 miles with bituminous road mix.

Work let to contract in 1954 totaled about $42,000,000 while in 1955 this figure reached approximately $73,000,000. This includes right-of-way costs and engineering services.

Repair and maintenance work in 1955 cost approximately $7,774,000, which includes $2,900,000 for winter maintenance during the 1954-55 season. Total maintenance expenditures include such items as concrete pavement repair, routine patrol, bridge

DATA RELATIVE TO THE 1955 AND 1956 TEXAS HIGHWAY DEPARTMENT PROGRAM

SUMMARY STATEMENT OF CONSTRUCTION PROJECTS COMPLETED (INCLUDING FARM-TO-MARKET ROADS)
September 1, 1954 to August 31, 1955

TYPE	BETTERMENT AND IMPROVEMENT MILEAGE	BETTERMENT AND IMPROVEMENT COST	ORIGINAL OR STAGE CONSTRUCTION MILEAGE	ORIGINAL OR STAGE CONSTRUCTION COST	TOTAL COST
Highways					
Earth Roads Not to Standard		$ 12 037.00		$ 43 645.70	$ 55 682.70
Grading and Small Structures		48 467.39	61.80	2 741 608.00	2 790 075.39
Flexible Base, Untreated			9.05	557 692.26	557 692.26
Asphaltic Surface, Under 1 Inch, on Flexible Base	3,970.15	14 827 637.28	2,283.18	38 662 139.73	53 489 777.01
Asphaltic Surface, 1 Inch or More, on Flexible Base	774.06	5 363 484.47	776.73	23 721 467.47	29 084 951.94
Asphaltic Surface, 1 Inch or More, on Rigid Base	90.29	1 021 131.81	273.21	8 260 080.23	9 281 212.04
Concrete Pavement	126.83	1 556 140.34	11.73	15 401 503.33	16 957 913.67
Advance Engineering Projects			9.20	764 392.80	764 392.80
Grade Crossing Protection Devices				167 871.24	167 871.24
Total Highways	4, 961.33	$22 829 168.29	3,457.90	$ 90 320 400.76	$113 149 569.05
Structures					
Bridges, Concrete		2 000 062.34		3 290 382.90	5 290 445.24
Bridges, Concrete and Timber		7 835.95			7 835.95
Bridges, Concrete and Steel		441 997.63		10 938 612.25	11 380 609.88
Bridges, Steel				27 992.46	27 992.46
Bridges, Timber Treated		34 074.32			34 074.32
Bridges, Steel and Timber		20 403.94			20 403.94
Bridges - Steel, Concrete & Timber		124 085.25		1 565 042.07	1 689 127.32
Underpasses, Concrete and Steel		116 168.35		3 391 143.85	3 507 312.20
Underpasses, Steel, Concrete & Timber				470 050.88	470 050.88
Overpasses, Concrete				49 254.34	49 254.34
Overpasses, Concrete and Steel		1 773.51		4 573 119.05	4 574 892.56
Overpasses, Timber Treated		7 818.16			7 818.16
Total Structures		$ 2 754 269.45		$ 24 305 597.80	$ 27 059 867.25
Grand Total		$25 583 437.74		$114 625 998.56	$140 209 436.30

repair and the maintenance of roadside table sites, waysides and scenic overlooks.

Wisconsin is in a rather unique position as far as material shortages are concerned. Last year when it appeared that there might be a scarcity of certain materials important to road building activities, the Commission immediately contacted the suppliers of these vital materials and asked how we might avoid the shortage problem. The suppliers asked if we could furnish them with a list of our needs much further ahead than usual thus making it possible for them to know quite accurately when and where the demands would become heavy. The Commission succeeded in providing the manufacturers with our approximate program at such an early date that it now appears we will have no problems during 1956 with material shortages.

The Commission has announced a highway improvement program for 1956 that will cost in the neighborhood of $106,000,000 — an all time record of work that will be let to contract. On the basis of the quotas reached during 1955 by planning ahead, indications are that Wisconsin will see this program executed and the goals reached, if adequate financing can be obtained.

William F. Steuber
Chief of Public Information

PURD B. WRIGHT has been named vice-president in charge of sales and advertising for both the Kansas City and Omaha offices of the Ash Grove Lime and Portland Cement Company.

Mr. Wright joined Ash Grove in 1946 as sales manager and in 1954 was elected vice-president and general sales manager.

Industry Personalities

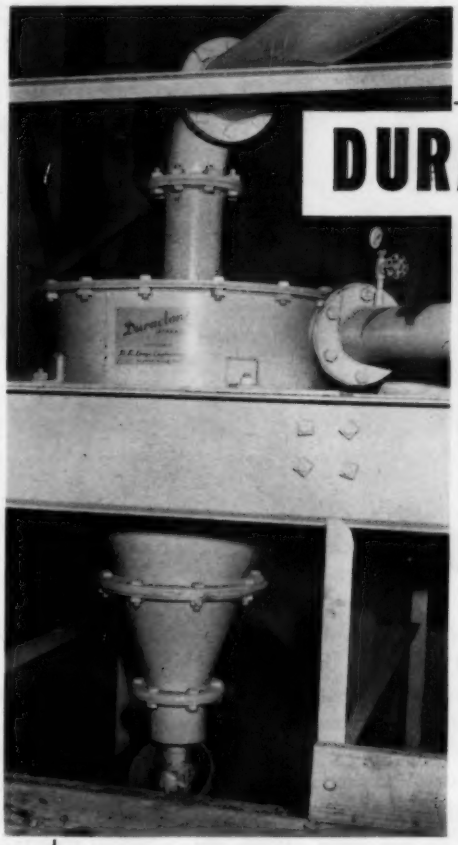
DR. E. T. CASLER has been promoted to manager of the Florida operations of the Phosphate Minerals Division of International Minerals & Chemical Corporation, effective January 1, 1956, according to an announcement made by George W. Moyers, vice-president in charge of the division. Dr. Casler replaces FLOYD B. BOWEN, who was recently promoted to production manager for the Phosphate Minerals Division's operations in Florida, Tennessee, and Montana.

Other recent appointments are as follows:

W. O. MCCLINTOCK has been promoted to assistant manager for engineering; H. T. LOEHR was transferred to assistant manager for production; H. E. UHLAND was transferred to the post of chief engineer; and F. J. CLAWSON was promoted to chief metallurgist.

GORDON TONGUE, president of the Northwestern Portland Cement Company, was honored recently when the Boy Scouts of America, Region XI, presented him with the Silver Antelope award for outstanding service to boys.

BENNETT M. SAUNDERS recently was named to the sales staff of Superior Portland Cement, Inc. A graduate of the University of Washington and a veteran of World War II, Mr. Saunders has been active in construction and contracting as a field manager for the Portland Cement Association and more recently with the Boeing Aircraft Company.



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● DURACLONES are completely rubber-lined for long life, and are sold with an unqualified guarantee of performance when installed as directed. Available in sizes to handle up to 800 g.p.m. input.

ANALYSIS OF FINE SAND RECOVERY

	% Retained	% Passing
30M	8.7	91.3
50M	63.2	36.8
100M	89.6	10.4
200M	97.7	2.3

Get the facts today!

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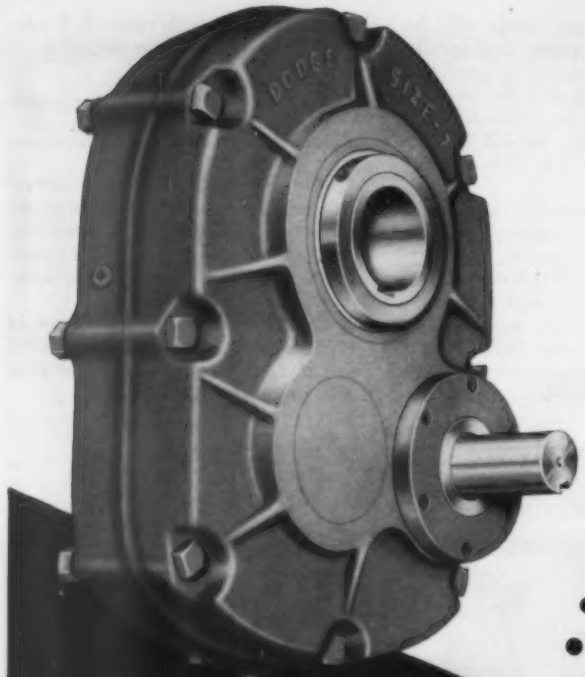

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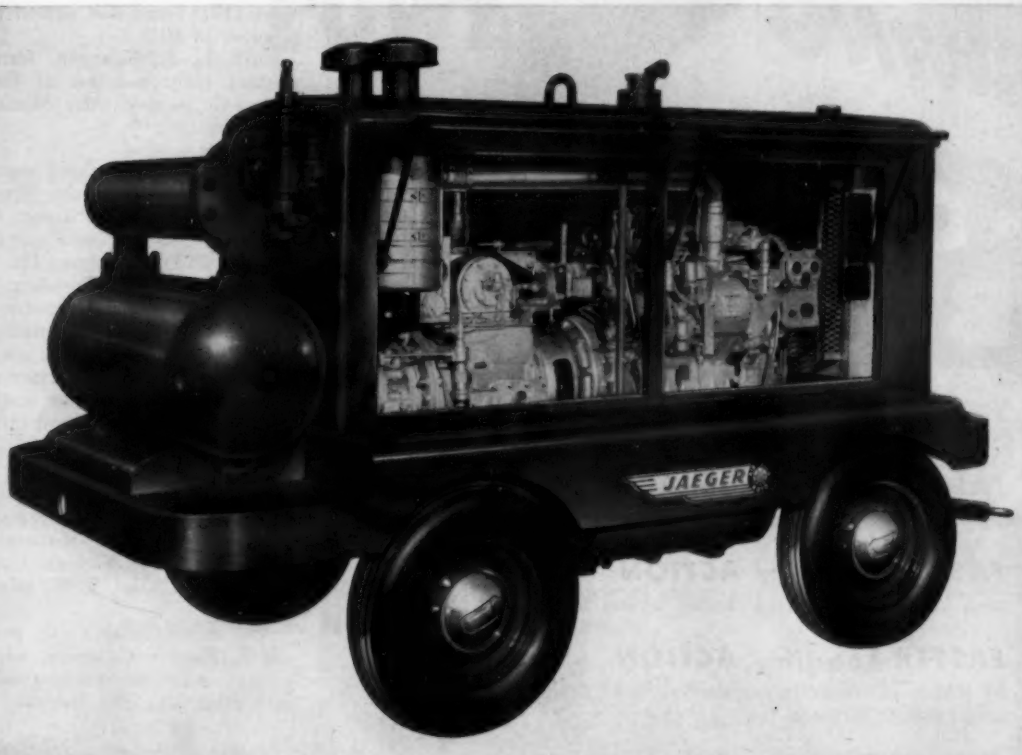

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when handling aggregate and loose materials;

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with variable, multiplied closing power for excavation;

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by reason of correctly engineered bowl designs with balanced power on each jaw;

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The combination of adjustable reeving and weight concentration in area surrounding lower sheave block exerting a direct pull on the cable, results in quicker opening and faster dumping.

"A mouthful at every bite"
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After 52 years of continuous service with the Lehigh Portland Cement Company, Allentown, Pa., RAYMOND A. MORITZ, plant manager at Fogelsville, Pa., has retired, effective January 1, 1956.

Mr. Moritz began his association with Lehigh at Ormrod, Pa., when he was 13 years old. His first position was that of a hoop maker in the cooper shop. Subsequently he became an apprentice in the machine shop, and in 1907, when the Fogelsville plant was built, he transferred to the machine shop there and became its foreman in 1911. He advanced to master mechanic of the plant (1915) and was named plant manager in 1917.

JOHN L. E. KRATZER, formerly assistant plant manager at Fogelsville, will succeed Mr. Moritz as plant manager.

MARK LINTZ, consulting engineer, has been retained by the Republic Cement Corporation, Prescott, Ariz., to supervise that company's proposed plant near Darke, Ariz. The new facility is expected to produce 750,000 bbl. of portland cement and 250,000 bbl. of white cement annually. During the last several months Mr. Lintz has conducted exploration for cement raw materials in southern California and Arizona for Republic Cement.

RAYMOND A. KESSEL and ALFRED R. DOLL have been named assistant manager and general manager, respectively, of the National Gypsum Company's Albany, N. Y., sales district.

Also appointed to a new position was E. PARKER CUMINGS, who has become assistant manager of the Richmond, Va., sales district.

VERNE P. KELSEY, vice-president and director of the Washington Brick and Lime Company since 1939, retired recently. Replacing Mr. Kelsey was WILLIAM H. KOPEINING, former Inland Empire representative of the company.

ALFRED C. OLSEN has been appointed manager of the National Gypsum Company's new plant in Westwego, La. Prior to his promotion Mr. Olsen managed the company's plant in Portsmouth, N. H., a position he held since 1951.

Mr. Olsen joined National Gypsum as a laboratory assistant and served successively as a quality supervisor, a line foreman, and later a mill superintendent at the Savannah, Ga., plant.

The New Allis-Chalmers Power Unit Line Delivers

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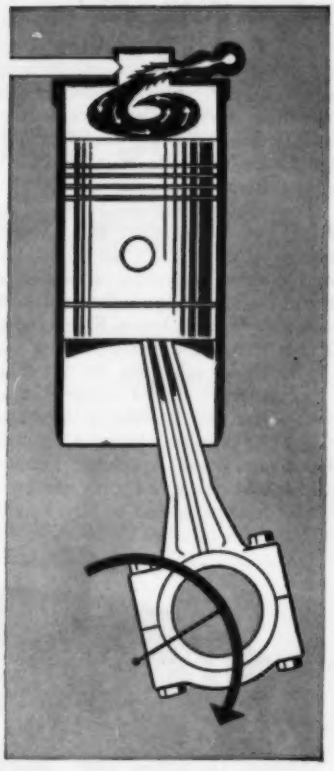

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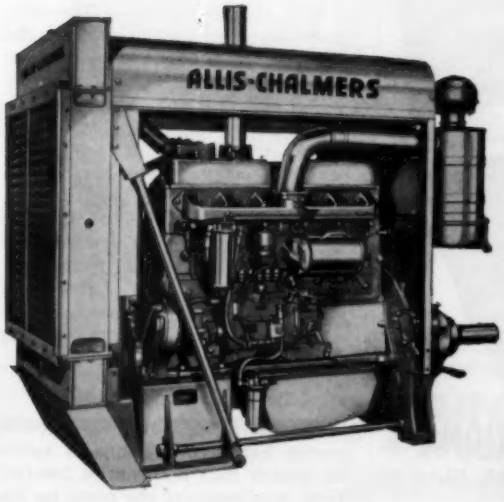
A blast from the energy cell (see drawing), thoroughly mixes air and fuel for complete burning in the combustion chamber. This results in peak efficiency, lower cylinder temperatures for more complete lubrication of walls, longer life for pistons and rings.

In addition, Allis-Chalmers power units are designed with seven main bearings, rigid blocks, removable "wet" cylinder sleeves, removable valve guides, full-length water jackets, full-pressure lubrication — all contributing to dependable, continuous, long life performance.

Ask your Allis-Chalmers dealer for the visual story revealing the full advantages of these engines.



Five sizes of Allis-Chalmers diesel power units —ranging from 15 to 197 brake hp—are available as open style or complete self-contained units. They are compact and easily installed on donkeys, saw and planing mills, etc.

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6-cylinder diesel

140 brake hp at 1400 rpm

779 cu in. displacement

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ALLIS-CHALMERS

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Cement Burns User

Recently a higher court rendered an unusually important decision to the effect that a seller of cement or ready-mixed concrete may be liable for heavy damages to a purchaser who suffers burns when using it.

For illustration, in *Simmons v. R. & J.*, 284 Pac. (2d) 813, the testimony showed facts, as follows: A man named Simmons, a welder by trade, during his spare time was constructing his own home. Shortly after laying the foundations, he met one Aydelotte, a salesman for R. & J., who sell ready-mixed concrete. Simmons showed Aydelotte the area where he proposed to lay a concrete basement floor. Aydelotte solicited the sale of concrete for his employer, and Simmons agreed to buy, leaving the type of mixture up to the seller.

One morning R. & J. delivered the first load of mixed concrete to Simmons. In order to reach the basement area the concrete was poured down a chute through a window opening and into the forms. Because the mixture was not wet enough, Simmons added ten gallons of water to it and requested that the succeeding loads be wetter. Three loads in all were delivered. Because Simmons had difficulty in spreading the concrete, he secured the assistance of a neighbor. They leveled the concrete by pushing it into position, using shovels and a long board for this purpose. During this maneuver Simmons frequently got down on his hands and knees to shove the leveling board. At this time he was wearing galoshes, jeans, a khaki shirt, and rubber gloves. Plaintiff testified that the galoshes and gloves were not worn to protect him from burns, but to protect his feet from getting wet and to enable him to handle the slick shovel. Simmons also testified that he had never seen anyone use rags and padding on their legs to protect them from the concrete. No one had ever warned him of the danger of getting burned by concrete, although he did know that exposure to wet cement caused a drying out of the skin.

Simmons worked leveling the concrete floor from 10:30 a.m. to 3:15 p.m. During half of this period his knees and legs were in contact with the wet concrete. Shortly after 1 p.m. Simmons began to notice a "tingle" on his legs which became increasingly irritating. He continued to work, however, because of the necessity of leveling the floor before the cement set. Upon finishing the job, he washed his legs with soap and water, observed that his legs "looked green", changed his clothes, and got a neighbor to drive him to the hospital. Two days after the exposure to the cement Simmon's temperature reached 103 degrees. It was then discovered that Simmons was severely burned over 15 percent of the area of his body, most of the burns being of the third-degree type. (This means that for the most part the burn extended through the entire thickness of the skin, that is, through both the epidermis and corium and down to the subcutaneous fatty tissue.) This required two extensive skin grafting operations, the first, by three doctors, requiring 8 hours, and the second 5½ hours. Simmons was hospitalized for nearly two months.

Simmons sued R. & J. for a large amount of damages. Although the lower court held Simmons not entitled to recover damages, the higher court reversed the verdict, and said:

"There can be no reasonable doubt that plaintiff (Simmons) made known to the agent of the seller (R. & J.) the particular purpose for which the goods were required. It is also a reasonable inference that plaintiff (Simmons) relied on the seller's skill and judgment to pick the proper type and mixture of cement for the flooring. The retailer, even though not equipped to test a product, is under an absolute liability to his customer for the implied warranties of fitness for proposed use and merchantable quality include a warranty of safety of the product."

Law of Res Ipsa Loquitur

Generally speaking, no injured person can recover damages unless he proves that his injuries resulted from negligence of the party he has

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SOLUTION — The use of long-life, wear-resistant parts, such as the grinding balls of B&W Type EL Pulverizers, which are forged of specially selected steels and are then scientifically heat-treated in furnaces like the one shown. Finished balls also are held to close spherical tolerances.

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Process Equipment Dept., 161 East 42nd Street
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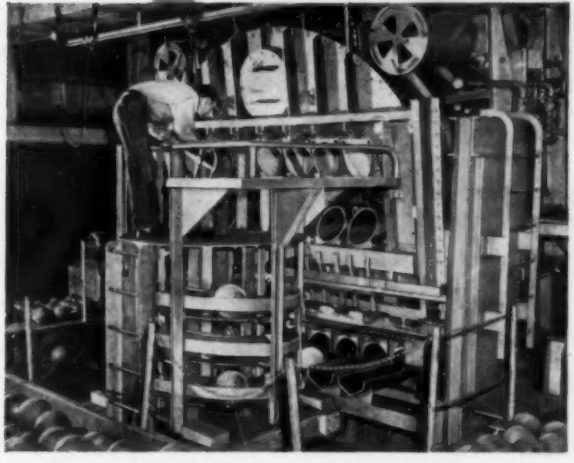

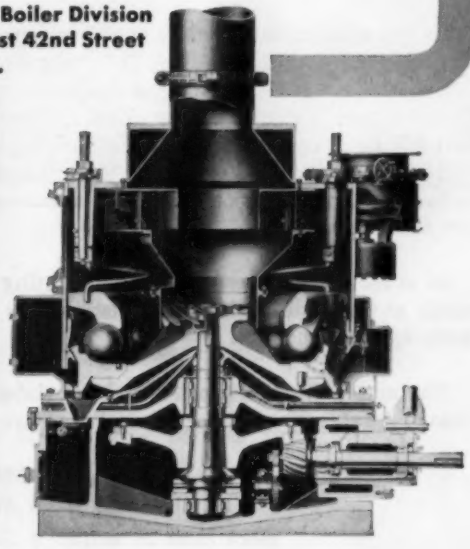

BABCOCK & WILCOX

C-207

sued. However, a late higher court has held that if the law of *res ipsa loquitur* is applicable to an injury case, the injured person may recover damages without proving that his injuries resulted from negligence of the person or company being sued.

According to a late higher court decision, the doctrine of *res ipsa loquitur* is applicable (1) if it can be reasonably concluded that the accident does not normally occur unless some one is negligent; (2) if the accident was caused by an instrumentality in the exclusive control of the party being sued; (3) and, if it was not contributed to by a voluntary action on the part of the injured person.

See *Stanford v. Richmond Chase Company,* 43 Cal. (2d) 287. In this case an injured employee sued his employer to recover damages for his injuries. This higher court held the employer liable without proof that the latter's negligence caused the injury. This court held that the doctrine of *res ipsa loquitur* was applicable because "it appeared that the accident was of such a nature that is can be said, in the light of past experience, that it probably was the result of negligence by some one and that the employer is probably the person who is responsible."

Law of Blasting

Recently a reader asked this question: Under what circumstances must a property owner prove that negligent blasting operations caused the damage to this property in order to recover from the party who did the blasting?

A review of late and leading higher court decisions establishes this law: A corporation, firm or individual carrying on blasting operations is liable without proof of negligence for all direct injuries to the property of another, as where stones or debris are cast upon it. On the other hand, in the absence of negligence there is no liability for consequential harm such as is caused by concussion or vibration.

For illustration, in *Coughlan v. Grande & Son,* 125 N.E. (2d) 779, the testimony showed facts, as follows: A contractor named Grande & Son entered into a contract with a city for the construction of an addition to a high school. The school property was adjacent to a house and lot owned and occupied by one Coughlan. In the course of the construction work it became necessary to blast a ledge of rock which was close to the Coughlan property. Coughlan's dwelling was severely damaged. Coughlan sued Grande & Son for heavy damages and proved that virtually all of this damage resulted from concussion or vibration generated by the blasts. The proof of damage for the most part related to the house and consisted of cracked ceilings, cracked walls, a broken oil tank, and the like. There was some evidence that rocks and debris were cast on Coughlan's property, but the damage from this source was negligible.

During the trial Grande & Son proved that it had engaged D. M. Bernardi, Inc., to do the blasting and that this company was a "reputable . . . organization" which had had many years of experience in blasting operations. When the blasting was done, the usual technique was employed to safeguard adjacent property from harm. These precautions included the placing of railroad ties and a mat over the rock to be blasted.

The lower court held Grande & Son liable in damages to Coughlan but the higher court reversed this decision and clearly indicated that Grande & Son is not liable, saying:

"The plaintiff (Coughlan) could not recover for damage to his house

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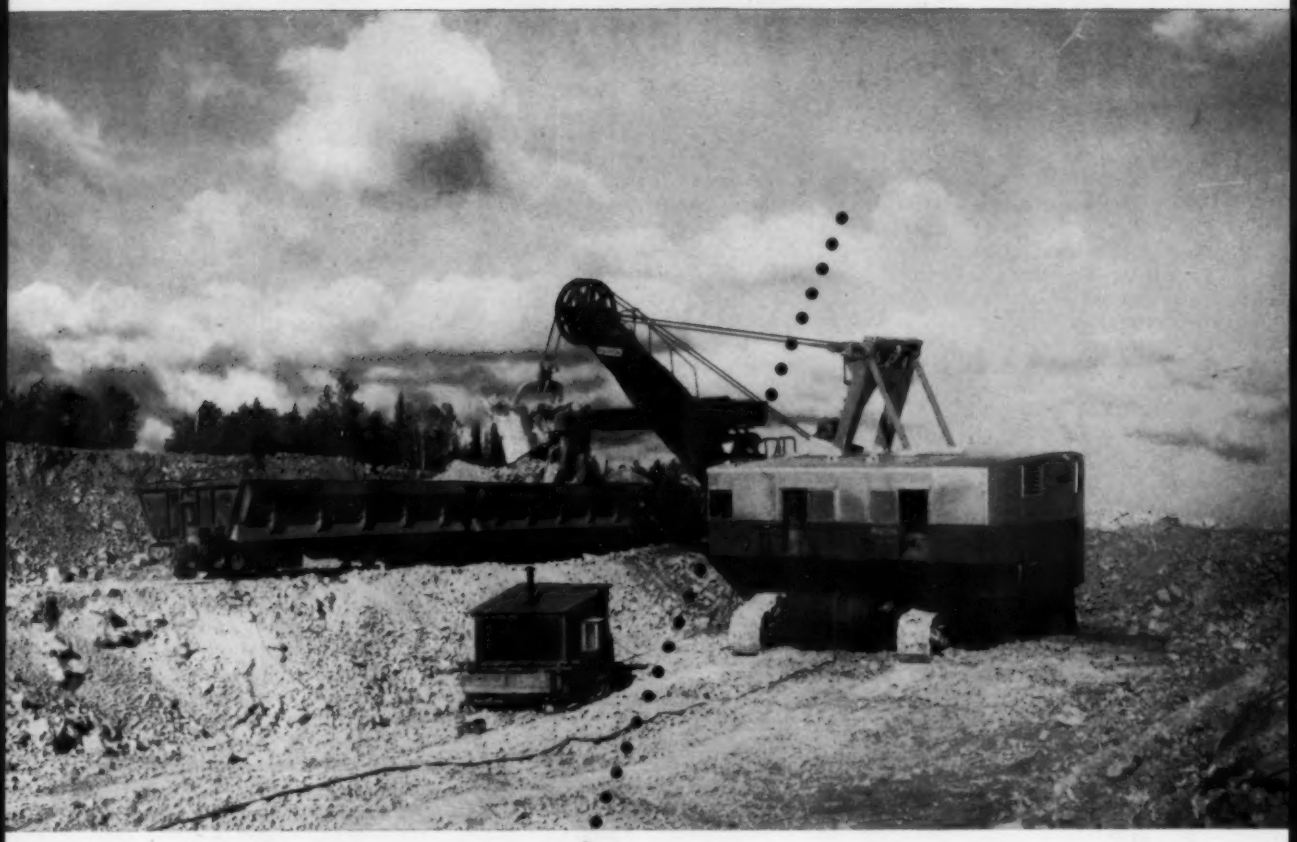

This 10 cubic yard Marion 191-M is the world's largest shovel on two crawlers. It is teaming up with big haulage units to establish new concepts of production in several industries. Here the 191-M loads 90-ton rail cars in the pits of one of the midwest's great producers of limestone.

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caused by concussion without proof of negligence."

When Tenant Causes Damage

Last month I received a letter from a land owner who leased his land to a quarry company, and he wants to know whether or not he may be liable for blasting operations of the quarry company.

The answer is: Modern courts consistently hold that where a dangerous condition "or legal nuisance" is created on land by a person other than the owner, and the owner was not instrumental in causing the nuisance, the land owner is not liable in damages caused by the nuisance. Actually, the legal basis of liability which arises from the creation or maintenance of a nuisance, such as blasting, does not depend upon the ownership or possession of the land.

On the other hand, it is well to explain further that a property owner may be liable for the continuance of a nuisance after he has knowledge of its existence, although it was created by an unauthorized person. However, if the property owner is not aware that a tenant or leasee is maintaining a dangerous condition or nuisance, the modern higher courts hold that he is not liable for resultant injuries to persons or property.

See the leading case of *Tennessee Company v. Hartline,* 11 So. (2d) 833. Here a corporation leased land from its owner for the purpose of obtaining rock by blasting operations A pedestrian was seriously injured when a rock struck him during blasting operations. The pedestrian sued the owner of the land for damages.

During the trial the land owner introduced testimony to the effect that he had no information or knowledge as to how the blasting was being done by the corporation. In view of this testimony the higher court refused to hold the owner of the land liable in damages to the injured pedestrian and said:

"The landlord was not charged with the knowledge of a nuisance caused by improper blasting by its tenants, or by others upon its leased premises without its knowledge or consent."

Also, see *Birmingham v Grover,* 159 Ala. 279. This court held a land owner liable in damages for injuries caused by blasting operations of his leasee or tenant because the testimony proved that the land owner knew that the blasting operations were being dangerously performed by the leasee. The court said:

"If a party (land owner) knows or has reason to believe that any one is in dangerous proximity to the place where the blasting is being done, it is the duty of the person either to prevent the throwing off of material, or to give warning when the blast is about to be made."

Restrictive Clause is Valid

This query was recently received: "Is a clause in a written employment contract valid which restricts a sales manager or other employee from taking employment with a competitor for a period of one to five years in the same territory he covers for his present employer?"

According to a leading higher court decision, such a restrictive clause remains valid and effective although the status of employment is changed, unless by positive agreement the former contract is cancelled.

For example, in *Henges Company v. May,* 223 S. W. (2d) 110, the testimony showed facts as follows: One May took employment as a salesman with the Henges Company. The salesman signed a written contract of employment which contained a restrictive clause that May would not for the period of one year from the termination of his employment engage "in the same or similar business" as that carried on by the employer in the territory over which his employment had extended.

After May had worked as a salesman for several months, he was made sales manager. May's employment as sales manager was purely by oral agreement, and his compensation was tentatively increased. After May had worked as sales manager for several months, he resigned and took employment with a competitor. The former employer then filed suit and asked the court to issue an injunction to prevent May from continuing employment with the competitor.

May argued that he was not obligated by the restrictive clause in the written contract which employed him as a salesman because later, by verbal contract, he was employed as a sales manager. However, the higher court held that since the first and previous employment contract had not been cancelled, May was obligated by the restrictive clause in the written contract. The higher court granted an injunction preventing May from working for a competitor of the former employer.

This court explained that when

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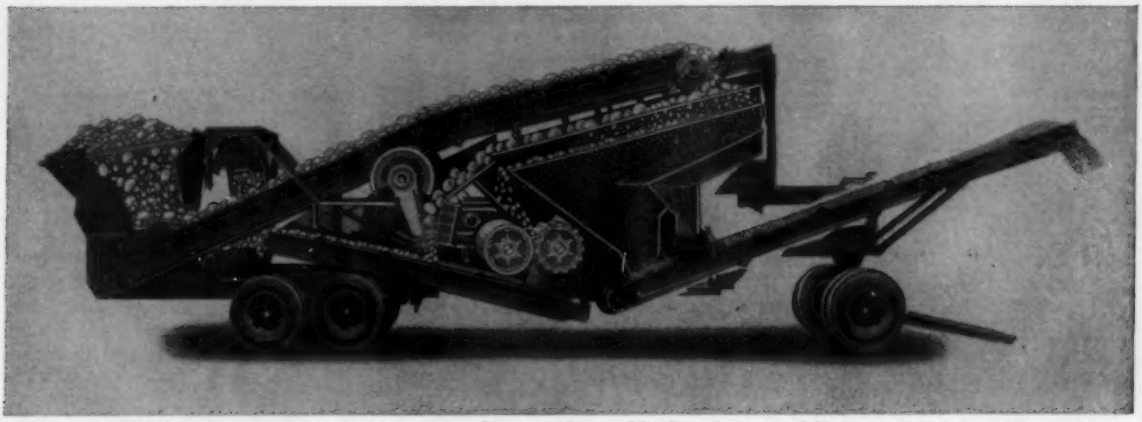

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Jaw Crusher	10"x16"	10"x24" 10"x36"	10"x36"	10"x36"
Roll Crusher	18"x16"	24½"x16"	30"x26"	40"x24"
Gyrating Screen	2'x8' 2½	3'x10' 2½	4'x12' 2½	5'x12' 2½
Plate Feeder	19"	19"	25"	25"
Weight	28,600#	44,500#	54,000#	59,600#
CONVEYORS				
Under Conveyor	18"x10'	24"x14'	30"x18'	30"x19'
Feed Conveyor	20"x23'	24"x26'	30"x29'	36"x34'
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May was promoted to the position of sales manager, he should have made a new written contract which did not contain the restrictive clause, and then May could have lawfully taken employment with the competitor.

Employ Injured

According to a leading higher court decision, all contractors and owners of real property have a legal duty to warn all persons who lawfully use the premises of existing and not clearly apparent dangers. This rule of law applies to employees who work for contractors.

For example, in *Miller v. Brunsaw,* 250 S. W. (2d) 958, the testimony showed these facts: A contractor was employed to install equipment in a building. One of the contractor's employees who was working on a ramp, was seriously injured when he stepped upon and fell through what appeared to be solid flooring, but was insecure plasterboard.

In subsequent litigation the higher court held the injured employee entitled to recover $30,000 damages. The court explained that anyone who owns unsafe premises must use reasonable care to warn employees and all others of obscure dangers. His failure to do so will result in an award of reasonable damages to an injured person.

Contractor's Shovel Buried

The owner of a gravel pit inquired what legal duty he owes to safeguard equipment brought onto his premises by owners and contractors to do work. Recently I located a higher court decision which clearly holds that the owner of gravel pit, quarry, etc., always is liable for damages, theft, or loss of equipment caused by negligence of the pit owner or his employees. This rule of law applies to equipment owned by all persons who bring the equipment onto the premises by permission of the property owner.

For example, in *Glenn v. G. Sand. and Gravel Company,* 265 Pac. (2d) 1013, the testimony showed facts, as follows: A man named Glenn was the owner of a Bucyrus-Erie shovel. He made a contract with the G. Sand and Gravel Company to shovel and load gravel from its pits, for which he was to be paid 10 cents per cu. yd. of delivered material. The latter exercised no control over Glenn or Newman, who operated the shovel. The officials of the G. Sand and Gravel Company used its own men and equipment in blasting and preparing the material for Glenn. These officials allowed Newman to shovel gravel until the face of the pit became 60 to 100 ft. in height, which is known to men experienced in the industry to be hazardous. Blasting was continued by G. Sand and Gravel Co.

One night after the powder men had left, a tremendous slide occurred, burying Glenn's shovel under the material from the mountain. Glenn sued the G. Sand and Gravel Company for the full value of the buried shovel.

The counsel for the G. Sand and Gravel Company argued that it could not be liable because Glenn contributed to the disaster and assumed the risk by leaving the shovel in a dangerous place and by continuing to operate under conditions which appeared patently dangerous to him.

During the trial an expert witness testified that he had seen similar slides in gravel pits operated under the same conditions as here and that "It's not unusual if you take the bottom out. It happens nearly every time."

The higher court held the G. Sand and Gravel Company liable in damages to Glenn for the full value of the shovel, and said:

"The fact that the defendant (G. Sand and Gravel Company) did not foresee the likelihood of such an accident is not controlling here, for it was warned that there was danger to the men working under the vertical bank. Negligence may be the proximate cause of damage even though the actor was not able to foresee the injury in the precise form in which it occurred, nor to anticipate the precise damage which would result from his negligence."

Contractor Fails to Get Permit

According to a late higher court decision, a contractor can sue and recover payment for work performed, although he did not comply with a state law requiring him to obtain a permit to do the work.

For example, in *Pflugradt v. Heth,* 69 N. W. (2d) 477, it was shown that a contractor named Pflugradt filed suit against a property owner to foreclose a mechanic's lien in amount of $1,390. The property owner claimed that the contractor could not recover payment for his work because he never obtained a permit in compliance with the statutes of the state to perform the work.

The higher court refused to hold the lien invalid on these grounds, and said: "What the defendant (property owner) asked us to do is to penalize a contractor for failing to comply with an order which has nothing to do with the performance of the work."

Liable to Insurance Company

Recently a higher court held that if the negligence of a property owner caused destruction of nearby property or merchandise, the former is liable to an insurance company which paid the loss to the owner of the destroyed property.

For illustration, in *Atmore Truckers Association v. Westchester Fire Insurance Company,* 218 Fed. (2d) 461, the testimony showed facts, as follows: The Goodwill Company insured certain merchandise against loss by fire. Further testimony showed that Atmore Association operated a machine on nearby property and in the process of operating it a fire was started. As a result of the fire, the merchandise belonging to the Goodwill Company was destroyed. The Westchester Fire Insurance Company paid the loss, amounting to $7,417.08 to the Goodwill Company and then sued the Atmore Association to recover this amount. In holding the latter fully liable, the higher court said that one whose negligence causes a fire loss is fully liable to all others.

Husband Ratifies Contract

Recently a cement contractor wrote in part, as follows: "If a wife makes a contract for work on her husband's building is the husband obligated by his wife's contract?"

Last month a higher court answered this question. In *Southern v. Krieger,* 71 S. E. (2d) 884, the testimony showed that certain property was in the husband's name, but the wife made a contract on it without knowledge of the husband. After the husband knew the facts he did not complain for six weeks, but then sued the contractor, asking the court to cancel the contract.

The higher court refused to do so, saying that the husband by not complaining for six weeks automatically ratified and made valid the contract made by his wife.

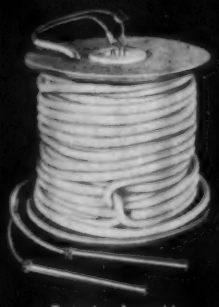
Validity of Exclusive Agency

A reader asked this question: "Is an exclusive agency contract void because it violates anti-trust laws?"

The Clayton Act provides specifically that it is unlawful "for any person . . . to lease or make a sale or contract for sales goods on the agreement that the lessee or purchaser shall not use or deal in the

Shot from bottom...

"Alternate Velocity"



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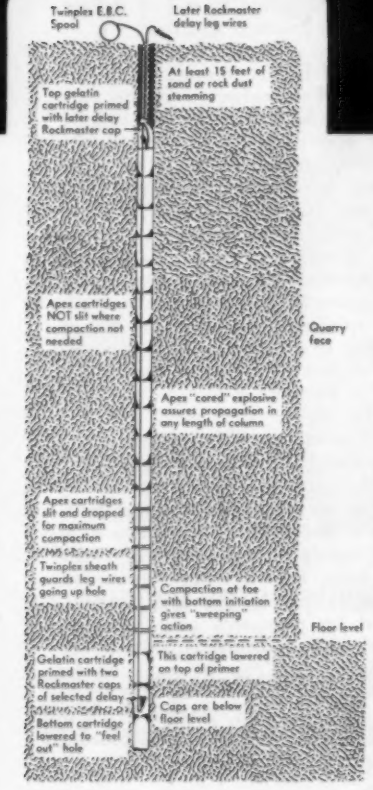
Twinplex E.B.C. Spool
Later Rockmaster delay leg wires
At least 15 feet of sand or rock dust stemming
Top gelatin cartridge primed with later delay Rockmaster cap
Apex cartridges NOT slit where compaction not needed
Quarry face
Apex "cored" explosive assures propagation in any length of column
Apex cartridges slit and dropped for maximum compaction
Twinplex sheath guards leg wires going up hole
Compaction at toe with bottom initiation gives "sweeping" action
Floor level
Gelatin cartridge primed with two Rockmaster caps of selected delay
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goods of a competitor where the effect of such agreement may be to substantially lessen competition or tend to create a monopoly in any line of commerce." The United States Supreme Court pointed out in *United Corporation v. United States* 258 U. S. 451, that the Clayton Act is broader in its prohibitions than the Sherman Act. It is also broader than the Cartwright Act.

According to a late higher court decision, unless a contract tends to lessen competition, it is valid.

For illustration, in *Rolley v. Merle Norman,* 278 Pac. (2d) 63, it was shown that the Merle company is a competitor of Rolley Company. Rolley sued Merle Norman and asked the court to enjoin the latter from doing certain acts in violation of the Cartwright Act. The testimony showed that Merle offered exclusive agencies or franchises of its products to certain retailers who signed contracts not to purchase merchandise from competitors of Merle. Also, the latter instructed the franchise holders to cease purchasing any products manufactured, sold, or distributed by competitors; further, that they had a six-month period within which to dispose of all products of competitors; and that if they failed or refused to comply with this mandate, Merle would terminate the exclusive franchise and would also refuse to sell or deliver any of its products to them.

Certain retailers who were customers of Rolley complied with this order and thereafter refused to purchase any further products of Rolley; they also cancelled orders for its products made at a prior time. Rolley further alleged in a general manner that such "agreement, concert and undertakings" by Merle was designed, intended, and had the tendency of fixing, determining and controlling terms, prices, business methods, etc., and also that it tended to restrict trade and commerce, free and lawful competition and to promote a monopoly.

The higher court held that the Merle company did not violate the anti-trust laws, and said:

"It is still quite a step to say that a single competitor whose business is not extensive enough to stifle competition and who offers his product to a retailer coupled with an exclusive franchise for the area provided he purchases only the supplier's line of products is liable for damages and can be enjoined by another competitor who is the losing suitor in this triangle. To say that this relationship will prevent competition is unrealistic."

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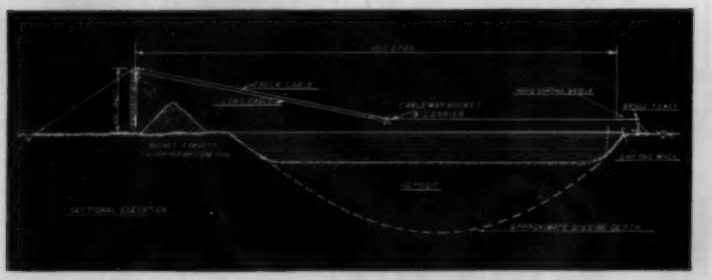
These benefits are also available to present owners of slackline cableways. Guaranteed Gravel & Sand Co., a Sauerman Slackline user for over 35 years, has increased hoist speeds from 230 to 350 fpm. on the digging cycle and conveying speed to 800 fpm.—a gain of 25%. Guaranteed's 2-cu. yd. bucket is digging 450 ft. away from the surge pile and delivers 150 cu. yds. per hr.

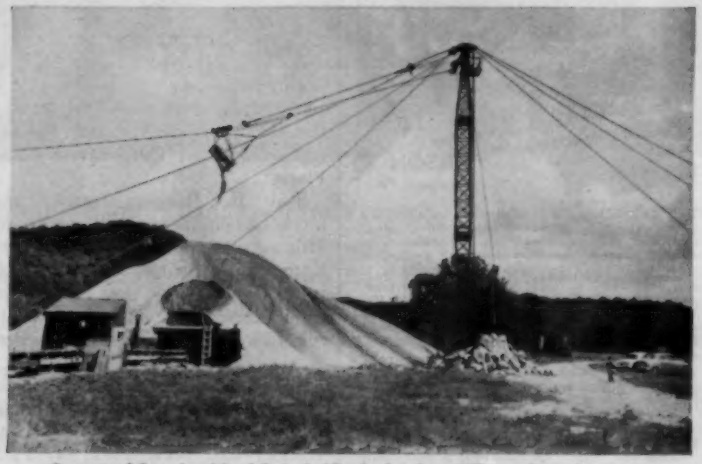
The Sauerman Method lets you work distant material—up to 1,000 ft. away and dig 100 ft. or more below water. Now more than ever the greater tonnage available through fluid drive operation makes a Sauerman Slackline Cableway the low cost way for deep digging.

Get the best machine for your job. Write to Sauerman for expert advice on any materials handling project. For additional information on slackline cableways, ask for Catalog C.

is conveyed and dumped automatically at surge pile.



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.



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Manufacturers' News

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Mr. Fraunfelder joined Easton Car in 1914 as a salesman. He advanced through the positions of salesman in the Easton office, sales engineer in the New York office, design engineer, manager of Quarry and Mine Department, and chief sales engineer. In 1948, he was elected to the position of director of engineering and research.

G. D. Fraunfelder

U. M. Johnson

Mr. Johnson started with this manufacturer of quarry and mine and industrial cars and trailers in 1945 as assistant superintendent. In 1953 he was appointed project engineer.

Thomas J. Hunter has been appointed manager of the newly combined Industrial and Public Relations Department at the Baldwin-Lima-Hamilton Corporation's Lima Plant.

Ray R. Runser, former chief methods engineer, will assist Mr. Hunter as supervisor of labor relations. Frank Bruton who headed the industrial relations post at the Lima plant since 1953 will assume a labor relations position in Eddystone, Penn.

G. R. Cuthbertson has been promoted to assistant general manager of the tire division, United States Rubber Co., New York, N. Y. He joined U. S. Rubber in 1936, and has been production manager for the division for more than a year. R. E. Behrman, who had been assistant production manager, will succeed Dr. Cuthbertson as production manager.

Morris Machine Works of Baldwinsville, N. Y., makers of heavy duty slurry pumps, announces the appointment of J. E. Kennard of Tampa, Fla., as its sales representative in Florida except for the phosphate industry in the central part of the state.

Kay Miller, formerly chief research and development engineer of Borg Warner Corp. has been appointed assistant chief engineer of American Tractor Corp., Churubusco (Ft. Wayne) Ind.

Mr. Miller was born and educated in Denmark, receiving his mechanical engineering degree from Odense Machine Technikum in 1922. After 4 years as a designer of agricultural machinery and 2 years as an aircraft designer with Rohrbach Aircraft Co., in Copenhagen, he came to the United States in 1928 and joined the engineering department of Sundstrand Machine Tool Co., in Rockford, Illinois. He also served 3 years as Diesel engine designer for Fairbanks-Morse Co., Beloit, Wis.

Kay Miller

Robert L. Wicker

Robert L. Wicker, for the past three years general sales manager for the Dart Truck Co., Kansas City, Mo., has been appointed sales manager of the Federal Motor Truck Division of Napco Industries, Inc., Minneapolis, Minn. In his new position as sales manager for Federal Motor trucks, he will concentrate on sales of equipment such as crane carriers, four-by-fours, six-by-sixes, transit mixer carriers and other such specialized transport machinery built with "on-highway" axles. Federal will design and build such custom-tailored machinery for all phases of the mining, logging and construction industries or for other specialized applications.

35 years of dependable equipment performance

with **GULF FUELS** and **LUBRICANTS**

on the job *at the Warner Co., Devault, Pa.*

Gulf lubricants and fuels have been on the job for over 35 years at the Warner Company—helping to keep equipment "up," maintenance costs down.

One of Gulf's E.P. Lubricants contributes to longer life for kiln reduction gears; Gulf Dieselube H.D. provides efficient, economical lubrication for Diesel engines in trucks and shovels; and Gulf fuels contribute to top engine performance.

Let a Gulf Sales Engineer help you find opportunities for important savings through the use of Gulf Quality Lubricants and Fuels on your equipment.

Consult the telephone directory for the number of your local Gulf office.

GULF

Gulf Oil Corporation • Gulf Refining Company
1822 Gulf Building, Pittsburgh 30, Pa.

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

John R. Bremer has been appointed purchasing agent of SKF Industries, Inc., Philadelphia, Penn., succeeding Harry J. Lance, who has retired after 35 years as purchasing agent. Mr. Bremer was formerly assistant purchasing agent.

Henry B. Coldiron has been named sales engineer representing Baughman Manufacturing Co., Inc., Jerseyville, Ill., for the eastern United States, Quebec, and Ontario, Canada. He will fly a company owned plane to cover this extensive territory.

Willis G. Scholl, a group vice president, has been elected executive vice-president, Allis-Chalmers Mfg. Co., Milwaukee, Wis., and Boyd S. Oberlink has been elected vice-president in charge of the Tractor Group.

Mr. Scholl started with Allis-Chalmers in 1936 as a salesman in Columbus, Ohio. He later held the positions of assistant branch manager and branch manager of the firm's Toledo, Ohio, branch house. From 1947 to 1951 he served as eastern territory manager of the Tractor Division's sales force. He was then named sales manager of the Allis-Chalmers Tractor Division and in 1952 vice-president in charge of the division. The division was reorganized into the Tractor Group in 1955. He was elected to the board of directors in 1953.

Mr. Oberlink, previously vice-president and general manager of the firm's Construction Machinery Division, succeeds Mr. Scholl as

Willis G. Scholl

Boyd S. Oberlink

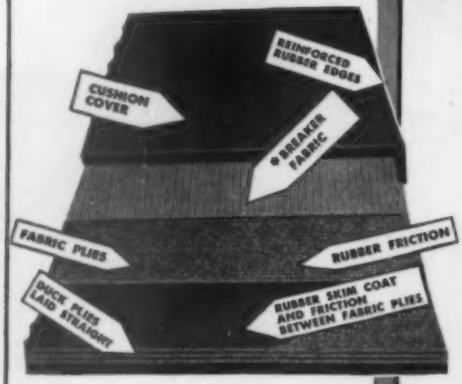
group executive. The Tractor Group includes the company's Construction Machinery, Farm Equipment and Buda Divisions. Mr. Oberlink began working in the Allis-Chalmers Tractor Division in 1934. He held the positions of assistant supervisor of the allied equipment department and manager of the division's Washington, D. C., office. In 1943 he was named assistant industrial sales manager and three years later assistant to the vice-president in charge of the Tractor Division. He was named vice-president, Tractor Division, in 1951 and vice-president and general manager, Construction Machinery Division, last year.

E. J. Mercer has been appointed general manager, Construction Machinery Division. He has been managing director of Allis-Chalmers Great Britain Limited with headquarters at Essendine, England. In that position he directed all operations of the company in Great Britain which served much of the world for the products manufactured by Allis-Chalmers in England. He joined Allis-Chalmers as a student engineer in 1937 and served in the allied equipment sales department and then was transferred to the Memphis branch. In 1947 he became industrial district manager at Buffalo, N. Y., and a few months later was appointed industrial territory manager for the southwest.

He left for England in 1951 as general manager of the Tractor Division's operations there and was elected managing director when the British subsidiary was formed in 1953.

TOPS IN TON MILES

from every... BELT by HAMILTON



Eighty-five years of concentrated experience in serving industry . . . building belts that do the toughest jobs longer for less through improved fabrics and fibers . . . longer-lasting rubber compounds . . . up-to-the-minute construction techniques.

The result? Belting that carries more tonnage more miles per shift . . . that actually costs less over the life of the belt.

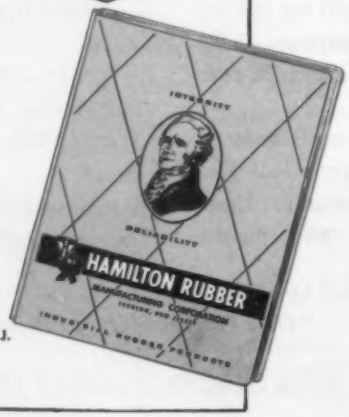
How can you know this? A trial in your own operation will furnish positive evidence. Call your nearest Hamilton Distributor.

*Breaker fabric available if required

WRITE, WIRE, PHONE

If you would know more about Hamilton and our complete line of Industrial Rubber Products . . . Hose . . . Belts . . . Packings and Mats write, wire or 'phone today for our all new Catalog. A copy belongs in your reference library.

NOW



Be sure...use Hamilton... Always dependable!

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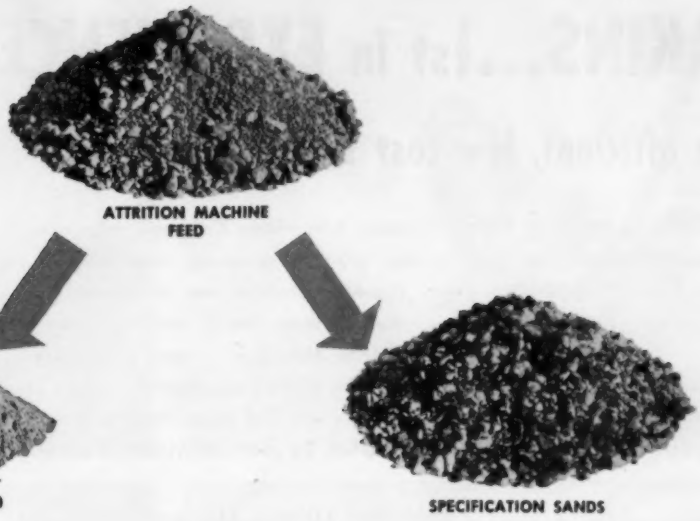
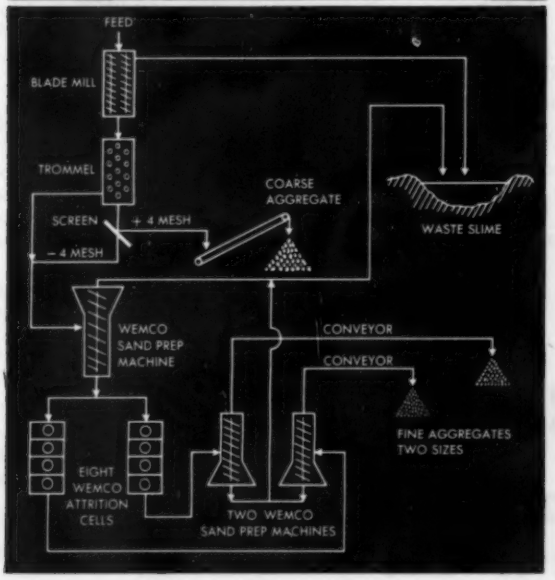


If you have a clay problem–

Here's Proof of how **WEMCO** ATTRITION MACHINES

break down cemented materials



The above photographs clearly illustrate how the Wemco Attrition Machine removes clay cementing material from sand particles in the plant of a California aggregate producer. With ordinary scrubbing methods this producer was unable to break down the cementing material present in order to meet State aggregate specifications. After installation of Wemco Attrition Machines, this operator was able to scrub loose the cementing material and then remove it by desliming. Note the clean, sharp sand particles produced in the process. The result was a higher profit aggregate of greatly improved quality which fully complied with State specifications.

The Wemco Attrition Machine is a new and more efficient method of washing sand particle surfaces by controlled turbulence of high density pulps. Its thorough abrading action literally scrubs the clay from sand particles more completely than methods formerly used and permits the recovery of clean aggregates for marketing.

Flowsheet of aggregate plant shows use of eight Wemco Attrition Machines in conjunction with two No. 48 Wemco Sand Preparation Machines. Previous to installation, operator was unable to meet fine aggregate specifications.

WRITE WEMCO TODAY for further information on how Wemco Attrition Machines can improve your aggregate operations. Wemco facilities are available for attrition tests on your samples, if desired.

WEMCO®
WESTERN MACHINERY COMPANY

760-K FOLSOM STREET • SAN FRANCISCO 7, CALIF.

Representatives in principal cities of the United States and Canada and in major countries throughout the world.

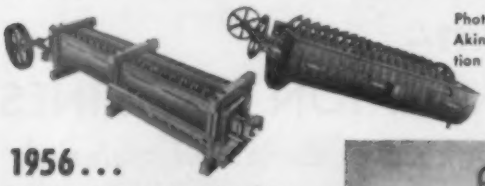
AKINS...1st in EXPERIENCE

on efficient, low-cost sand washing

1908... the first Akins. Colorado Iron Works Company, established in 1860, specialized in making crushing, grinding, screening, cyanidation, amalgamation and smelting equipment. The Akins Classifier was developed by CIW to provide a practical, continuous system for separation of sand from slime.

The outstanding success of the Akins lead to many other successful applications and to Akins leadership in the field of classification. Today, every Akins installation on classification, sand washing, and heavy media is backed by 48 years of specialized classifier experience, 96 years experience in the mining machinery business.

1908... first Akins. for SHANNON COPPER CO., Clifton, Arizona.

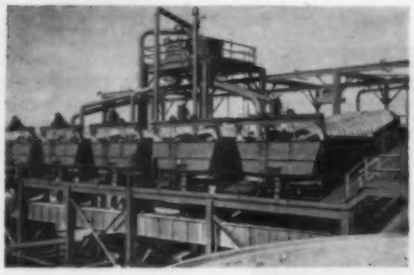


Photos show typical early models of the Akins, including one of wood construction for acid conditions.

1956...

Akins Sand-Washing Classifiers

Photo shows typical installation of Akins classifiers. When designed for sand washing, Akins classifiers have flared tanks with large pool area for thorough, clean washing; they provide close separation to exacting specifications; and for difficult sand-slime separations, are frequently equipped with lifter rods and spray water boxes.



1912...A statement of policy...*Then as now*

"Our aim has always been the production of a high-grade line of machinery, the prices being made as low as consistent with high quality. In no case do we attempt to build a machine to come within a certain price and place it in the field of competition with others having low first cost as their chief merit. It is this policy, consistently maintained for fifty years, that has established our enviable reputation."

(taken from CIW catalog 10C published in 1912)

AKINS*...the Original Spiral Classifier
*A registered trademark of CIW

COLORADO IRON WORKS Co.

DENVER, COLORADO

WRITE FOR CATALOG

SPECIALISTS IN CLASSIFICATION FOR 48 YEARS

Robert C. Ochs has been named general manager of the Axle Division of Eaton Manufacturing Company, Cleveland, Ohio. For the past year he has been assistant general manager of this division, serving under Geo. W. Veale, vice-president and general manager, who will continue as a vice-president devoting his time to the broader scope of corporate policy, in addition to advising R. C. Ochs in the area of Axle affairs.

Mr. Ochs became associated with Eaton Manufacturing in the Central Research Division in 1947. He was later transferred to central purchasing and in 1952 he joined the Axle Division staff.

Robert S. Ochs

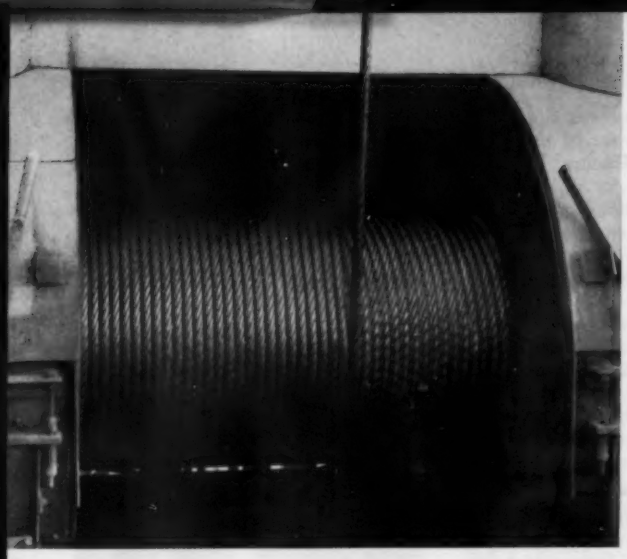
Geo. W. Veale

Eaton vice-president Geo. W. Veale joined the Torbensen Axle Company in 1920 as production manager. When this company was acquired by Eaton in the early 1920's, he was named manager of the Bumper Division, a post he held from 1923 to 1940. In the latter year, he was promoted to assistant to the president, transferring his office from Jackson, Mich. where the bumper division was then located to Cleveland. He was made a vice-president in the early 1940's and in 1946 was named vice-president and general manager of the Axle Division.

Joseph E. Cox has been elected vice-president of Thermoid Company, Trenton, New Jersey, and general manager of Essex Rubber, a Thermoid division. He is a veteran of 32 years in the rubber industry.

Charles J. Williams, chairman of the board of the Moore Dry Kiln Co., died recently at Jacksonville, Fla.

Gordon Ley has been appointed district representative serving the Colorado area by Electric Steel Foundry Co., Portland, Ore. He has been with ESCO for fifteen years, the last six of which he has served as an engineer specializing in ore processing equipment.



OVERCOMING ABRASION—Wire rope takes a beating on some jobs by abrasion. It is squeezed in multiple layers under tremendous pressure on rotary drilling drums in the Texas oil fields. In the Northwest it drags under heavy logs.

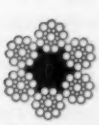
In this Arizona mine it is scraped over rocks to operate a slusher. Everywhere it is rubbed severely on winches that do not wind smooth. Under such conditions Red-Strand 6 x 19 Seale wire rope will last longer and save you money.

What can you do better with 6x19 Seale Red-Strand?

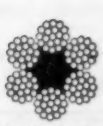
6 x 19 Seale has the same strength and weight as the more frequently used 6 x 19 Filler Wire, but the arrangement and size of the wires is different. You can see in the diagrams that the outer wires are fewer in number and larger in size. They provide *high resistance to abrasion* and greater wearing quality with somewhat less flexibility.

It's the perfect rope for certain jobs. Would it solve a problem for you? Be less trouble? Save more money? A Leschen man is near you. Perhaps he can help.

Send for the 64-page Leschen Wire Rope Handbook. It describes Seale and all other Red-Strand wire rope constructions.



6 x 19 Seale



6 x 19 Filler Wire

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

LESCHEN
HERCULES *Red-Strand*®
WIRE ROPE
HKP

Wade Meloan has been appointed as a vice-president of Pettibone Mulliken Corporation, Chicago, Ill. He has been with Pettibone Mulliken

Wade Meloan

L. E. Denman

since 1943 and has been treasurer since 1947.

He is replaced as treasurer by Lawrence E. Denman who joined Pettibone Mulliken in 1953 as assistant treasurer. Both men have a wide and varied background in industry.

Ernest J. Gorman, executive vice-president of Yuba Manufacturing Co., San Francisco and Benicia, Calif., announces the acquisition of C & D Manufacturing Co., Perkins, Calif. The new acquisition will be operated as a Yuba division with R. P. Nichols, formerly C & D sales manager, in charge of sales.

R. A. Harmon has been appointed district sales supervisor of the Twin Disc Clutch Co., Racine, Wis. He will be responsible for coordinating geographical marketing, and general supervision of the activities of Detroit, Los Angeles, Newark, Cleveland, New Orleans, Rockford and Racine branch sales offices.

Mr. Harmon has been connected with sales engineering since joining Twin Disc more than eight years ago. He served as field representative, eastern district sales engineer, and as manager-dealer sales before promotion to his present position.

William H. Depperman has been appointed to the new position of director of public relations of Link-Belt Co., Chicago, Ill. He assumes duties which previously had been assigned to Harlan B. Collins, secretary, who will continue to have corporate responsibility for the function.

Mr. Depperman was the former public relations director of Olin Industries, Inc., of East Alton, Ill. Previously he was associated with Steve Hannagan, as an account executive and with the Western Union Telegraph Co. in public relations, publicity and advertising capacities.

Donald J. Drinkwater has been appointed assistant manager of the Marcy Mill Division of The Mine and Smelter Supply Co. He was associated with United States Steel Corporation and the Ozark-Mahoning Mining Company prior to joining Mine and Smelter as a metallurgical engineer in 1946.

Mr. Drinkwater is program chairman for the Colorado Minerals Beneficiation Division of A.I.M.E. and chairman of the Crushing and Grinding Section of the A.I.M.E. for 1956.

D. J. Drinkwater

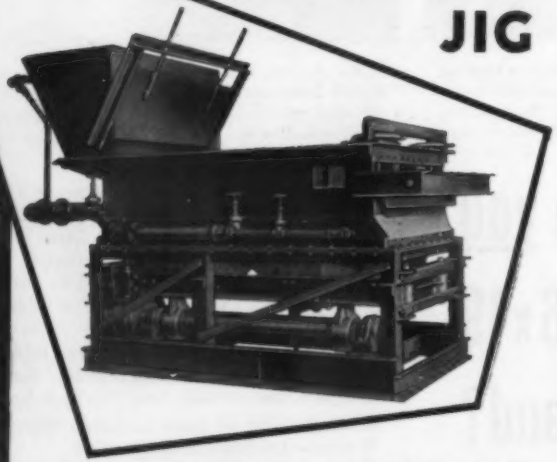
Austin Goodyear

Austin Goodyear, vice-president and general manager of the industrial rubber, machinery and engineering divisions of Hewitt-Robins, Inc., Stamford, Conn., has been promoted to the position of executive vice-president.

Mr. Goodyear joined Hewitt-Robins in 1941, starting in the production department of the company's Passaic, N. J., plant. He left the company in 1943 to join the Air Force and returned to the production department of the plant in 1946 and was appointed production manager in 1947. He was transferred from production to sales in 1948 as assistant to the vice-president in charge of sales. He was named an assistant division general manager in 1952 and in the following year was made general manager. He was elected a director in 1952, and a vice-president in 1953.

A new facility for manufacturing Caterpillar crawler Tractors in the United Kingdom was announced today by executives of Caterpillar Tractor Co., Ltd. of Great Britain. The firm will soon break ground for a half-million square-foot plant at Glasgow, Scotland. Production of Cat D8 and D4 Tractors, exact counterparts of American models, is expected to commence by 1958. About 1500 persons will be employed initially. Managing director of Caterpillar Tractor Co., Ltd., is W. J. Bornholdt.

THE MECKUM
SAND AND GRAVEL
JIG



REMOVES
WOOD
LIGNITE
OCHRE
SHALE
POROUS STONE
SOFT STONE
COAL
CHERT
CLAY

Improve your sand or gravel specifications at a low cost per ton. Of compact design, the Meckum Jig separates low from high specific gravity materials with a positive water and mechanical action.

Write us for details or nearest installation.

MECKUM ENGINEERING, INC.

53 W. Jackson Blvd., Chicago 4, Ill. Dayton Road, Ottawa, Ill.

K. R. Chandler has been named service manager for the Koehring Company, Milwaukee, Wis. In his new post, he succeeds G. N. Nelson whose retirement after 44 years of service with the Koehring Company became effective on December 31.

Mr. Chandler joined the Koehring Company engineering staff in 1948. Previous to that he had spent two years in the U. S. Navy and another year with the Montgomery-Ward Company. A graduate engineer, he shifted to sales work at Koehring in 1950.

K. R. Chandler

Don L. Douglass

Don L. Douglass has been appointed to the newly created position of parts sales manager for The Thew Shovel Company, Lorain, Ohio. He assumes responsibility for all matters pertaining to the sale and distribution of parts for Lorain power shovels and cranes, both domestically and for export, and for the Byers line of shovels and cranes recently acquired by Thew.

William F. Jacobi has been named as director of the newly created package engineering department by Union Bag & Paper Corporation, New York, N. Y. This department consolidates the company's packaging services and packaging machinery department.

William F. Jacobi

T. L. Guarniere

T. L. Guarniere has been appointed as merchandising manager of the Detroit Diesel Engine Division of General Motors Corporation, Detroit, Mich. He joined Detroit Diesel in 1943 as a field representative.

J. W. Bloomquist, sales manager of Euclid Division, General Motors Corp., Cleveland, Ohio, has announced the appointment of Ray C. Call Co., South Charleston, W. Va., as authorized dealer for the complete line of Euclid earth moving equipment. The territory covers all of West Virginia except the counties of Brooke, Hancock, Marshall, Ohio, Morgan, Berkeley and Jefferson—and includes Garrett and Allegany counties in Maryland.

In addition to Euclid, the company represents Detroit Diesel, LeRoi and other well known construction equipment lines. Ray C. Call is president and Everett C. Call is general manager. J. H. Bentley and J. R. Moody head the service and parts department respectively.

Robert M. Van Tassel has been appointed head industrial designer for Joy Manufacturing Co., Pittsburgh, Pa., attached to the executive staff. He has been with Joy for seven years and prior to that was engaged in product development and design for the Cadillac Division of General Motors. In his new capacity he will stimulate styling advances on new and existing products.

Gilman Paper Co., New York, N. Y., announces that its pulp and paper-making subsidiary, St. Marys Kraft Corp., now has two paper machines operating at St. Marys, Ga., rounding out a program of expansion in the production of both bleached and unbleached kraft papers.

Another project rapidly nearing completion at St. Marys is a new quality-control laboratory and research center to function on all paper manufacturing at this full integrated mill and to develop new, improved bleached kraft board.

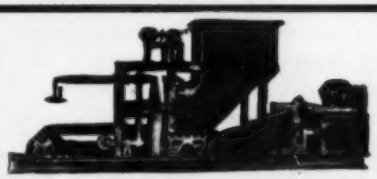
William J. McGowan has been named to the newly created post of director of industrial and community relations division, Allis-Chalmers Manufacturing Co., Milwaukee, Wis. In his new position he will direct industrial relations activities among all Allis-Chalmers employees and coordinate community relations programs in all cities in which Allis-Chalmers has plants.

Taylor-Wharton Division, Harrisburg Steel Corp., High Bridge, N. J., announces the appointment of Carl A. Read, Jr., as sales engineer in charge of its New England territory.

TIME TO TAKE THE BIG STEP

to top efficiency on scaling jobs

Recommended
by Bulk Material Producers



SCHAFFER POIDOMETERS

Scaling can be a serious hurdle in any plant . . . until SCHAFFER Poidometers "take over."

Fast, accurate, automatic Poidometers insure valuable weight-data . . . step up output . . . promote product uniformity. They're easy to operate, durable, and give high-economy service under all working conditions.

Available with total weight recorders, and remote controls for showing and changing feed rate.

OVER 1400
of these famous machines now serving Industry.

Superior for
WEIGHING
BLENDING
FEEDING
MIXING
RECORDING
PROPORTIONING

Write for CATALOG No. 5

SCHAFFER POIDOMETER CO.
2828 Smallman Ave. • Pittsburgh 22, Pa.

The all new "QUICK-WAY"

CONSTANT POWER in the palm of your hand!

with MORE Big Shovel Features

ANTI-FRICTION BEARINGS—Self-aligning anti-friction bearings on all high-speed continuous rotating shafts and drums. Special bronze bearings on swing rollers and center rotating sleeve.

BULL GEAR, HOOK ROLLERS and MACHINERY FRAME—Heavy, fully machined, hardened steel rollers and roller path. Large sturdy cast steel and electrically welded machinery frame.

ALL CHAIN and SPROCKET DRIVE—Machine-cut steel and cast iron sprockets with compact, high speed, heavy duty roller chains. Oil and dust tight cases.

POWER UP AND DOWN BOOM STANDARD ON ALL MODELS

MAIN ASSEMBLIES—High tensile steel shafting. Any one main assembly removable without tearing down others. Positive control shaft centers for 100% clutch and brake action.

AIR COOLED DRUMS—Large size, louver ventilated, ductile iron clutch and brake drums, finned-ventilated swing assembly drums designed for cool continuous running.

CLUTCH CONTROLS and HYDRAULIC SYSTEM—Smooth, positive minimum effort control from new hydraulic system. New design control lever locks.

ADVANCE DESIGN LUBRICATION—Daily grease fittings centrally located in cab panel. Intermittent grease fittings easily accessible. Positive grease and dirt seals at all revolving points. Forced-feed, filtered circulating lubrication on all chain and sprocket drives and on main shaft bearings. Main bearings also running in oil.

COMFORTABLE FULL VISION CAB—All operating controls, including instrument panel and lock throttle, conveniently located in front of operator. Safety glass windows on all sides and top insure full vision. Sliding and hinged windows provide maximum ventilation.

HINGED PANELS FOR EASY MAINTENANCE—Hinged fold out panels all around for quick, easy maintenance and adjustment.

The Most Advanced and Complete Line in the Small Shovel Field

PRECISION BUILT, RUGGED, FULLY CONVERTIBLE... The new "*QUICK-WAY*" models, designed to heavy-duty specifications ... with more big shovel features than any other in the small shovel field ... have perfect BUILT-IN balance that guarantees precision control, greater lifting power, longer life and more work per horsepower. Write today for complete information, or see your "*QUICK-WAY*" distributor for a FREE demonstration.

"QUICK-WAY"—50	"QUICK-WAY"—80	"QUICK-WAY"—100	"QUICK-WAY"—125
¼ Yd. 5 Ton	⅜ Yd. 8 Ton	½ Yd. 10 Ton	½ Yd. 12½ Ton

AND FIVE NEW "QUICK-WAY" CARRIERS

"QUICK-WAY" TRUCK SHOVEL CO. DENVER, COLO. A Penn-Texas Subsidiary

Mail Coupon Today!

"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 276 —2401 East 40th Ave.
Denver 5, Colorado, U.S.A.

Send complete information on the new "Quick-Way" Models and Carriers. Check model numbers interested in 50 ( ), 80 ( ), 100 ( ), 125 ( ).

Name_____

Address_____

City_____ State_____

With the Famous Money-Making Line of "QUICK-WAY" ATTACHMENTS

Worthington Corp.'s Holyoke, Mass. works and sales operations have been combined as the Holyoke Division, according to an announcement by Walther H. Feldmann, executive vice-president.

At the same time, he announced that William A. Finn has been appointed general manager of the Holyoke Division. Mr. Finn joined Worthington Corp. as an application and sales engineer and from 1930 to 1941 he served as New England district sales manager.

C. M. Basile, vice-president of sales and manufacturing, Link-Belt Speeder Corp., Chicago, Ill., announces the appointment of N. V. Chehak as assistant sales manager. In his new duties at the factory in Cedar Rapids, Iowa, Mr. Chehak will aid sales manager G. W. Rowand.

Mr. Chehak has been with Link-Belt Speeder since 1949, first in the company's sales office and for the past four years as the firm's district representative in the Pacific Northwest and Canada.

Huber-Warco Co., Marion, Ohio, announces the appointment of John McCaffrey of Pleasanthill, Calif., as its district sales representative for seven western states, two Canadian provinces and Alaska. He will work with Huber-Warco distributors in Idaho, Utah, Montana, Washington, Oregon, California, Arizona, and Canadian distributors in Alberta and British Columbia. Mr. McCaffrey brings to his post a broad background of sales and industrial experience, having last served as East Bay district sales manager for Western Traction Co., of San Francisco. From 1945 to 1951 he was associated with Chicago Pneumatic's branch office at San Francisco as a contractors' representative.

Howard R. Meeker, chairman of the board of LeTourneau-Westinghouse, has announced his retirement. He was associated with the J. D. Adams Co. for 41 years, became board chairman of the LeTourneau-Westinghouse Co. when that organization acquired the Adams Co. in 1955.

B. F. Lease, president of Athey Products Corp., Chicago, Ill., has announced the signing of a licensing agreement with Steelweld Pty. Ltd., West Footscray, W.12, Victoria, Australia.

Under this agreement Steelweld will manufacture Athey products in Australia to Athey's specifications.

The board of directors of SKF Industries, Inc., Philadelphia, Pa., has announced that Richard H. DeMott, now chairman of the board and president, will relinquish the post of president of the company. He will continue to serve as board chairman. Edwin R. Broden, now executive vice-president, will succeed Mr. DeMott as president and chief executive officer.

Also announced is the appointment of Phillip A. Carlson as regional manager of the newly created midwestern sales region. Mr. Carlson will be in charge of the Chicago, Milwaukee, Minneapolis and St. Louis sales territories.

Chester G. Hawley has been appointed general manager of sales for the Industrial Division, The Jeffrey Manufacturing Co., Columbus, Ohio. The Industrial Division is one of the comanpy's three main divisions and handles distribution of the firm's transmission, conveying and processing equipment.

Mr. Hawley formerly managed the O.E.M. sales department. During 1952, he served a term as chief of the conveyor section of the National Production Authority in Washington, D.C. He succeeds the late Lincoln Kilbourne.

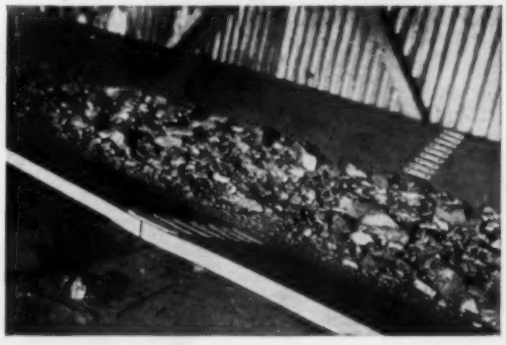
Daniel E. Noble, vice-president in charge of Motorola's Communications and Electronics Division, Chicago, Ill., has announced relocation of the division's Microwave and Industrial Products Department into new and expanded office, manufacturing and engineering quarters. This phase of the company's activity, previously at the Chicago headquarters location, will now be centered in a modern one-story structure a few blocks away. The new address of the department is 1400 N. Cicero Ave., Chicago, Ill.

Louis E. Dondero has been named manager of the Cleveland Rock Drill plant of the Le Roi Division, Westinghouse Air Brake Co. He succeeds Russell R. Morgan, who recently retired.

Mr. Dondero, who joined Le Roi in 1946 as assistant service manager, was most recently manager of Le Roi's service department. Prior to the latter position, he has been assistant production manager, production manager, and assistant works manager. As manager of the Rock Drill plant, he will be in charge of all phases of the plant's operation. As in the past, sales will be handled by the Le Roi sales department, located in Milwaukee, Wis.

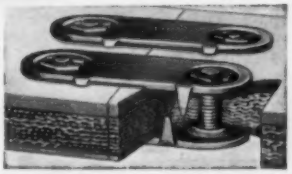
FLEXCO®

BELT FASTENERS and RIP PLATES



FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

★ FLEXCO Fasteners make tight butt joints of great strength and durability.
★ Trough naturally, operate smoothly through take-up pulleys.
★ Distribute pull or tension uniformly.
★ Made of Steel, Monel, Stainless, Everdur. Also Promal top plates.
★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



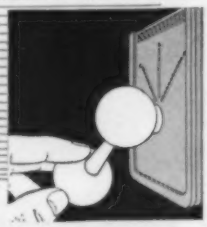
Compression Grip distributes strain over whole plate area

Order From Your Supply House. Ask for Bulletin F-112

FLEXIBLE STEEL LACING CO., 4623 Lexington St., Chicago 44, Ill.

Are you losing 10% of a day's production every time you change crusher setting?

One-man, One-minute PRODUCT CONTROL



● On some gyratory crushers, it takes 45 minutes and longer to change setting for different product size — in many instances, it takes hours. But even 45 minutes of downtime represents about 10% of your day. You don't have to put up with this lost production —not if you install the *Hydrocone* crusher, the crusher with one-man, one-minute product control.

With the *Hydrocone* crusher (and *only* with this modern crusher) you can change product size at the flick of a switch. Compensating for wear is accomplished just as easily. And if the *Hydrocone* crusher stops under load, just flick the switch and you're in business again.

Get all the facts about the *Hydrocone* crusher. See your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 07B7145B.

A-4931

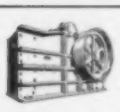
Hydrocone is an Allis-Chalmers trademark.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

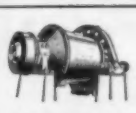
Hammermills

Vibrating Screens



Jaw Crushers

Gyratory Crushers



Grinding Mills

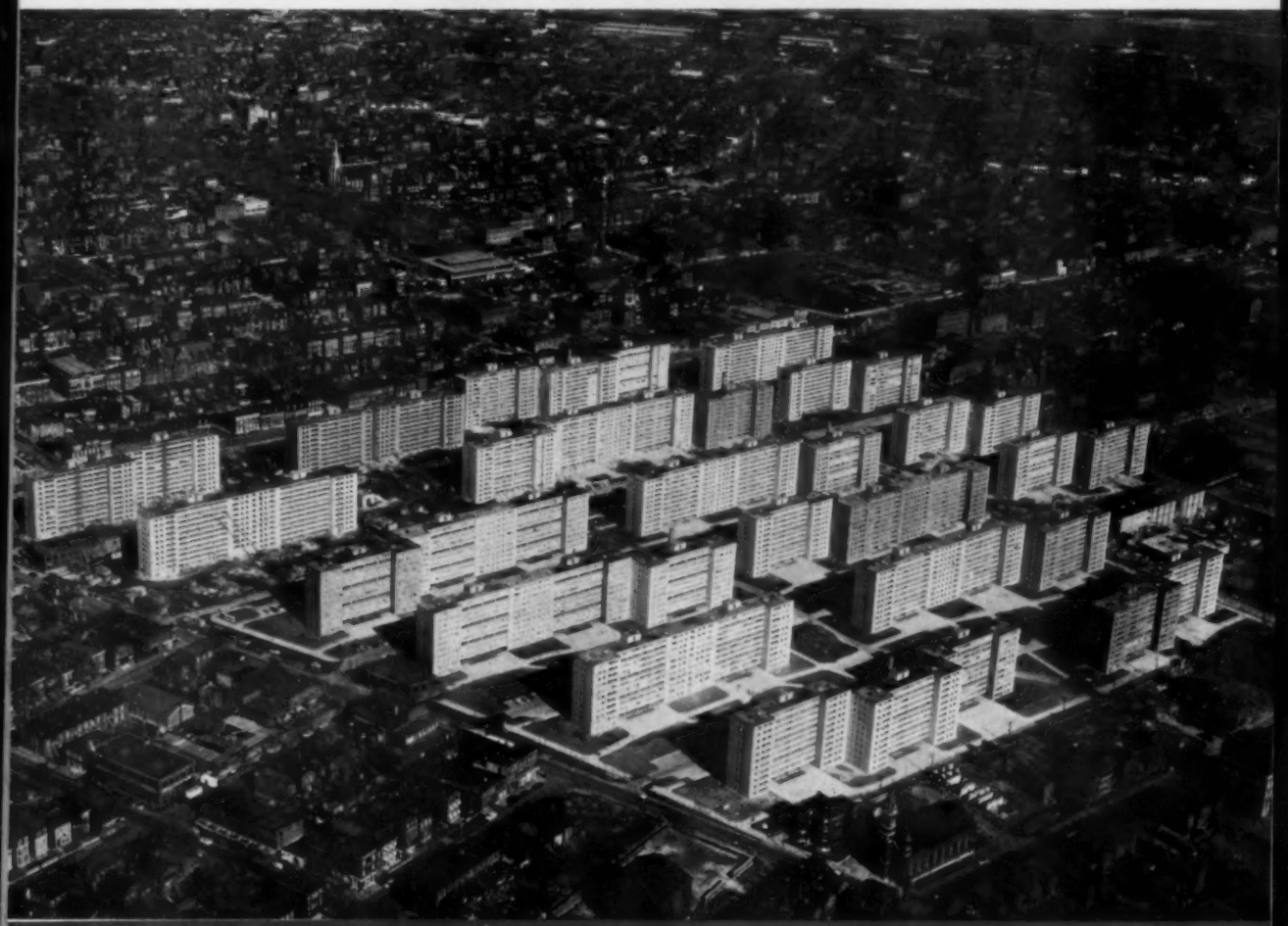
Kilns, Coolers, Dryers

For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete.

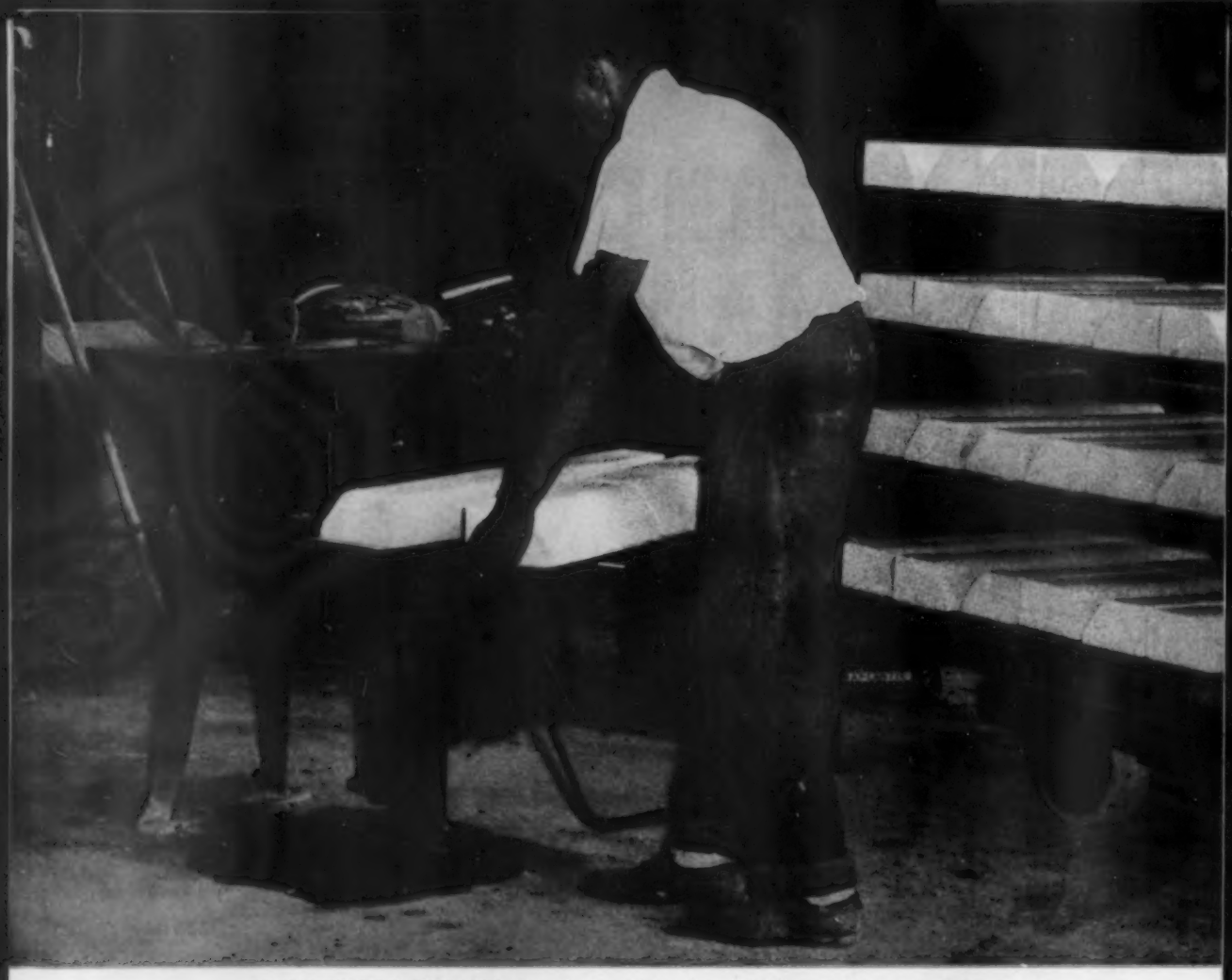
FEBRUARY 1956

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY



...-Pruitt Housing Project, St. Louis, Mo., in Which 1,730,000 Lightweight Units Were Used for Backup and Partitions (See Page 156).



GOOD APPEARANCE BUILDS SALES. Duraplastic-made products like these at the Totowa Concrete Block Company, Totowa, N. J., feature rich texture and clean, true edges for customer appeal.

Duraplastic* improves product texture...reduces breakage

"We use Duraplastic cement for all our products. It gives them the rich texture and fine finish so important in concrete specialties," reports Victor Agar, owner of the Totowa Concrete Block Company, Totowa, N. J.

Concrete products are easier to produce and sell when made with Atlas Duraplastic air-entraining portland cement. Smooth, cohesive mixes feed easily through the machine . . . make compact products with more resistance to passage of water . . . reduce breakage . . . give sales-promoting good appearance.

Duraplastic costs no more than ordinary cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For free descriptive booklet, write:

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*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

AIR-ENTRAINING PORTLAND

CP-D-178-C

Atlas® Duraplastic Cement

MAKES SUPERIOR CONCRETE PRODUCTS AT NO EXTRA COST

United States Steel Hour—Televised on alternate Wednesdays—See your local newspaper for time and station.

...INSURE your business future with a Columbia 12" HIGH

TESTED, PROVED and ENDORSED by the Concrete Block Industry

Columbia 12"-HIGH enables you to INSURE YOUR BUSINESS FUTURE with one concrete block machine! Your first cost can be low...you buy only the molds you need for today's production of standard block. Then, when you see a chance to step into the growing market for 12"-high specialty units, YOU'RE READY! Order the molds you need, and you're in business!

COLUMBIA 12"-HIGH MAKES

all standard 4", 6" and 8"-inch block, as well as a wide variety of 12"-high shapes, including drain tile, silo staves, water meter boxes, flue liners, etc. We will also make molds to order for special 12"-high face block units.

HERE'S ANOTHER IMPORTANT FEATURE:

All 12"-HIGH machines are now equipped to take 18½x26-inch pallets, as well as standard plain 18x20-inch pallets. YOUR PRESENT RACKS AND PALLETS CAN BE USED ON YOUR NEW 12"-HIGH MACHINE.

COLUMBIA 12" HIGH FEATURES:

- Electronic controls, hydraulic operation.
- 4 to 6 cycles per minute on standard plain 18 x 20 or 18½ x 26 pallets.
- Superfast agitation, insuring uniform aggregate delivery to molds.
- Rugged, compact construction, requiring minimum floor space.

Write, wire or phone today for full information on the Columbia line.

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DOW

CONCRETE SETS 100% TO 500% FASTER WITH DOWFLAKE ADDED

Transit-mix companies find 25-lb. bag an accurate measuring unit

Concrete construction is high-speed production. But an outmoded process can wreck tight schedules. Days are lost. Labor idles. Dowflake® (Dow calcium chloride 77-80%) is one way to insure fast work. Setting time is a case in point. At 25° concrete takes 6 weeks to reach a strength of 2000 psi. Time is wasted. Costs go up. Add 2% of Dowflake and time is slashed to 7½ days. Concrete is more workable. Its ultimate strength is greater. At any temperature it will set stronger faster with Dowflake. With the 25-lb. bag you can add Dowflake with ABC simplicity. Human error is virtually eliminated. Just add one bag to a five-yard batch (five bags cement per yard) to obtain 1% Dowflake. Two bags for 2%. It's fast, light work and can be done at the plant or on the job site. No loss through spillage. No awkward bucket measures to handle. No wonder the 25-lb. bag is becoming so popular.

Keep ahead of tight schedules. Increase concrete strength and setting speed. Do it the easy way with Dowflake in the 25-lb. bag. Write to THE DOW CHEMICAL COMPANY, Dept. IN 911T-4, Midland, Michigan.

you can depend on DOW *CHEMICALS*

DOW

The CONCRETE MANUFACTURER

February 1956

Ready-Mix and Precasting

THE concrete industry in the last ten years has witnessed two great changes in methods of designing, producing, delivering, and installing the end-product commodity, concrete. In this period we have seen the evolution and growth of ready-mixed concrete, especially in the latter half of its quarter-century life. We have similarly noted the more recent but nonetheless startling development of the art of precasting (coupled with prestressing) concrete structural members of practically all types. The extent of this latter change presages a new concept of reinforced concrete construction of buildings in the future.

Both these related developments have occurred in the normal process of growth. The visual evidence of their extent has been the virtual elimination of job-mixed concrete, with its consequent unsightly and equally unscientific piles of materials strewn on the streets. The entire mixing operation has been moved indoors. In each case, the finished product, concrete, is being delivered to the job, placed or erected, and is afforded the same subsequent treatment as that given competitive structural materials. These are essentials, if concrete is to perform successfully in future structural design.

We have noted, with increasing impatience at times, that many producers in these two integral segments of the concrete industry have in effect opposed each other, each perhaps feeling that the other operation threatens his potential field. We feel their efforts should be complementary — each actually supplying the other's lack. The ready-mix man is an expert in mass production of concrete, the precaster-prestresser an expert utilizing the potentials of high-strength concrete and high-tensile strands of steel to achieve a more efficient structural member. Surely there exists a middle ground of co-operative effort in which the best work of each of these producers can be combined.

If the mass-productive ability of the ready-mix operator could be used to provide the basic commodity of the precaster, who has technical know-how, the business of both would prosper. To produce reliable concrete having compressive strengths of from 8,000 to 10,000 p.s.i., or more, demands the closest possible control and the best possible equipment. The greater the prestress applied to concrete, the greater is its conversion to an "elastic" material — like structural steel — in which stresses and deformations can be accurately computed.

To effect this liaison of effort more practically, could not both work together for an increased share of the potential market? Could not the ready-mix man supply the proper concrete in quantity when and where the precaster requires it? Could not the precaster eliminate his bins, batchers, mixers, and other impedimenta in order to concentrate on more efficient design delivery, and erection? No structural designer presumes to *produce* the basic commodity he handles so efficiently. Let's take a page out of his book. Let's try to find that common denominator of co-operation and mutual understanding!

Roy L. Peck

Now - You Can Also Make BATTER Block on Your VIBRAPAC!

Cone has four courses of irregular 7½" high batter block. Except for the base, balance of structure forms a cylinder made of barrel block.

New Source of Revenue for Progressive Block Plants

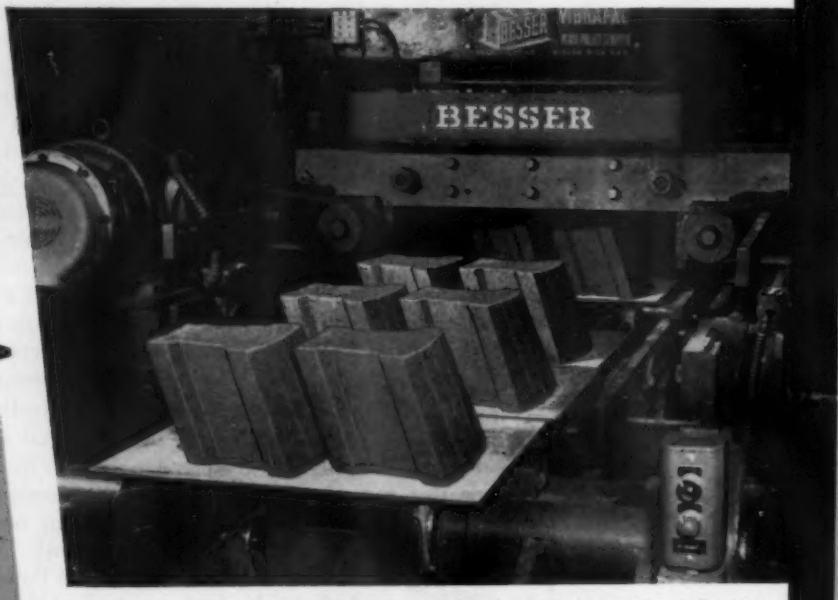
For the first time in the history of the Concrete Products Industry, you can make odd-shaped batter block, on a production basis, with the same speed as conventional block. The versatility of a Besser Vibrapac — *the world-famous concrete block machine* — makes this possible.

The Besser Vibrapac has always made barrel block for manholes. Now — you can also make the irregular batter block for building the cone. A standard Vibrapac machine, plus Plain Pallets, replaces the extremely slow and laborious old-fashioned method of tamping these irregular units by hand.

In practically every state, concrete block is now standard material for the construction of Catch Basins and Manholes, effecting considerable savings in both labor and materials. Why not cash in on the big demand for barrel and batter block? Let us show you how you can adapt your Vibrapac machine for this new market. Write for Bulletin No. 112.

Vibrapac attachments for making first and second courses of batter block cone. Stripper head shown in position above mold.

Mold insert and stripper head plungers for making third and fourth courses of batter block cone.



Close-up view of Besser Vibrapac making two irregular batter block on a Plain Pallet. Note the steady flow of these units. You get the same mass production method as regular block.

A 8564-1PBC

BESSER COMPANY

BOX 131 • ALPENA, MICHIGAN, U. S. A.

Complete Equipment for Concrete Block Plants

News of the Concrete Industries

Lundrigan's Concrete Ltd., Ready-Mix, Products Firm, Formed in Newfoundland

A new concrete manufacturing company—Lundrigan's Concrete Limited—has been formed in Corner Brook, Newfoundland. The concern will be managed by Ernest A. Leja, managing director.

Lundrigan's Concrete will operate a gravel pit, a ready-mixed concrete plant, and a concrete products plant. The company's line will include: concrete pipe, block, sidewalk plates, and prestressed concrete beams.

The products plant, presently under construction, is expected to be in operation in April. A Pioneer washing plant has been installed to produce properly graded and prepared aggregates.

Second Annual P.C.I. Convention In Hollywood, Fla., May 16-18

Members of the Prestressed Concrete Institute, at their December membership meeting in Ft. Lauderdale, Fla., were unanimous in their selection of May 16, 17, and 18 as the dates of the second annual Prestressed Concrete Institute convention. The Hollywood Beach Hotel, Hollywood, Fla., was chosen as the site for the convention.

The founding convention, held in 1955, attracted 339 contractors, concrete manufacturers, architects, engineers, and suppliers, and considerable interest was aroused.

In announcing the dates and location of the convention, it was also revealed that Dr. Alan M. Ozell has been named program chairman. Dr. Ozell, of the Engineering Department of the University of Florida, is supervising a Prestressed Concrete Institute-sponsored research and testing program. It is expected that research and field testing of prestressed concrete will highlight the convention.

Cement Prices Hit New High To Raise Construction Costs

A general round of cement price increases will force construction costs to new record highs. Also contributing to the cost rise are scattered price increases in lumber, mainly in Douglas fir.

The Construction Cost Index rose 0.5 percent in January to a new record high of 676.36, based on 1913 = 100. This is 5.1 percent higher than the figure for a year ago.

The Building Cost Index rose 0.4 percent in January to a record 480.48, also based on 1913 = 100, representing a 4.9 percent increase over last year.

The 20-cities average of portland cement prices went up 13 cents to a new all-time high of $3.68 per bbl. Increases are reported in all but four of the 20 U.S. cities covered. They range from a low of 10 cents per bbl. in Boston and Kansas City to 25 cents per bbl. in Birmingham and St. Louis.

Coming Events

February 5-8, 1956—Louisville, Ky. Sixth annual convention and show, Mason Contractors Association of America, Inc., Kentucky Hotel.

February 13-16, 1956 — Chicago. 26th annual convention and biennial exhibit, National Ready Mixed Concrete Association. Headquarters, Conrad Hilton Hotel; exhibit, Coliseum.

February 20-21, 1956 — Windsor, Ont., Canada. 7th annual convention, National Concrete Products Association. Prince Edward Hotel.

February 20-23, 1956—Philadelphia. 52nd annual convention, American Concrete Institute. Bellevue-Stratford Hotel.

March 6-10, 1956—Colorado Springs. 48th annual convention, American Concrete Pipe Association. Broadmoor Hotel.

April 9, 10, 1956—Chicago. 14th annual meeting, Mid-West Ready-Mixed Concrete Association. Drake Hotel.

April 12-14, 1956—Denver. Sixth annual convention, American Concrete Agricultural Pipe Association. Brown Palace Hotel.

May 16-18, 1956—Hollywood, Fla. Second annual convention, Prestressed Concrete Institute. Hollywood Beach Hotel.

Former Tellyer Facilities Sold to Concrete Conduit To Form New Division

Harry Tellyer, president of the three Tellyer Concrete Pipe Companies, has announced the sale of the firms to the Concrete Conduit Company of California.

Companies involved in the sale were Tellyer Pipe of New Mexico, in Albuquerque, Tellyer Pipe of Texas, with plants at Farmington and El Paso, and Tellyer Pipe of California, which is located in Healdsburg.

Concrete Conduit, a subsidiary of the American Marietta Company, Chicago, purchased the Tellyer holdings as a part of a vast expansion program currently being undertaken.

The three Tellyer companies will be consolidated and known in the future as the Tellyer Division of Concrete Conduit. Mr. Tellyer will remain as manager of the El Paso and Albuquerque plants.

Besser Co. Signs Contract To Equip Iraqi Block Plant

According to an announcement released by the Iraqi government, a contract has been signed by the Besser Company of Alpena, Mich., and the Mortgage Industries Company (Iraqi government-sponsored) to equip a plant in that country for the manufacture of concrete block.

The report stated that the facility, which will cost approximately $196,000, will have a capacity of 14,000 units per day. Output will be appropriated for government housing projects.

The Quartzite Stone Company of Lincoln, Kans., has announced plans for the construction of a concrete pipe-making plant near Great Bend, Kans. The new facility will manufacture 72-in. concrete pipe; it is the first manufacturing venture undertaken by the company.

The annual joint convention of the Texas Aggregates Association and the Texas Ready Mixed Concrete Association will be held on April 13 and 14 at the Statler Hilton Hotel in Dallas. This announcement was released by Ray L. Cain, executive secretary.

Concrete Products Assn. Of Washington Convenes For 27th Annual Meeting

The Concrete Products Association of Washington held its 27th annual fall meeting on November 4 and 5 at the New Washington Hotel, Seattle, Wash. On the first day separate programs were presented for concrete block producers and concrete pipe manufacturers, and the two groups enjoyed an informal dinner and dance during the first evening.

At the block manufacturers' meeting on the first day reports were given on the progress of a long-range testing program involving sample blocks from each member company. The purpose of this program, sponsored by the association, is to help the members determine how well their products meet market requirements. Reduction of fire insurance rates through the use of the column block-bond beam system in concrete masonry construction was the theme of a talk by E. Swanson, Seattle, Wash. He urged that block producers bring to the architect's attention this advantage in specifying concrete blocks.

At the meeting of the concrete pipe producers the basic material to be presented in a forthcoming booklet on culverts was discussed. Information is needed on proper and economical installation of concrete culvert pipe. Robert K. Lochow, manager of the Seattle office of the Portland Cement Association, one of the speakers at this meeting, stated that the six main considerations involved in designing the mix for a machine-made concrete pipe are strength, water-tightness, dimensional tolerance, appearance, economy, and limitation of machines.

In a combined meeting held on the second day Professor K. B. Berg of the University of Washington spoke on the assistance management may receive from cost accounting records. Professor Harry Blythe, also of the university, enumerated the various business conditions which guide the extension or restriction of credit, and R. H. Merryman spoke on local merchandising of concrete block and pipe.

W. S. Callender, manager of the association, explained that it is the policy of the organization to have speakers present talks on non-technical phases of the industry, as these are of great value to the members.

Cover Picture

● Our cover this month shows the new Igoe-Pruitt Housing Project, recently constructed under the supervision of the St. Louis Housing Authority. There are nearly 3,000 dwelling units in this job, in which 1,730,000 8-in. Haydite lightweight blocks were used for partition and backup work. Exposed units were painted. The blocks were furnished by Volz Concrete Material Company, and the aggregates by the Hydraulic Press Brick Company, both of St. Louis. Hellmuth Yamasaki & Leinweber were the architects on the project. The general contractor was I. E. Millstone Construction Company.

Why not look the

LINTEL MARKET

squarely in the face . . . ?

If you do you'll find a sizable, profitable market with the customer you are now selling.

Your next step will be to ask for a thorough description of the KENT Lintelator. This simple, relatively inexpensive machine has been in successful use for several years producing lintels that are popular with builders.

Lintelators are available for making lintels up to 8″x12″x10′8″. With this ingenious machine up to 1000 feet of lintels has been produced by one man in a day.

Texture just like that of the blocks appeals to builders and they are especially pleased to be able to dispense with steel lintels which involve another building craft with frequent delays.

Write for the LINTELATOR Bulletin now while you're thinking about it.

See KENT MACHINERY IN OPERATION RIGHT IN YOUR OWN OFFICE

Just ask to have our Representative bring the Movie Projector.

The KENT MACHINE CO. CUYAHOGA FALLS OHIO

DIVISION OF THE LAMSON & SESSIONS CO.

CONCRETE PRODUCTS MACHINERY SINCE 1925

Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario

Lith-I-Bar Company, Holland, Mich., is now publishing a monthly leaflet, the *Lith-I-Bulletin,* which is designed to help producers who use the firm's products. The 12-page booklet contains many helpful suggestions and various mechanical data of value to those responsible for machines made by the concern. A copy of the publication may be had by writing to the company.

Arch Hewit, founder of the A. C. Hewit Building Concrete Block and Supply Company in Seville, Ohio, died on January 5 at the age of 76 years. The company is now operated by his sons.

Pacific Coast Aggregates Honors 23 Truck Drivers For Safe Driving Records

Pacific Coast Aggregates, Inc., San Francisco, Calif., recently held a banquet in honor of some 23 of their ready-mix truck drivers who have had long periods of safe driving. Five-year awards were presented to four of the men who had perfect driving records since the institution of the program in 1951 under the supervision of the National Safety Council. Warren Brown, company safety engineer, awarded Ralph K. Anderson, veteran driver of the group since 1943, one of these five-year awards.

Ralph K. Anderson, (center) driver for Pacific Coast Aggregates, Inc., San Francisco, Calif., who has had a perfect record of driving for the last five years. With him are R. O. Lippi, truck department manager (left) and R. K. Humphries, vice-president and general manager of the firm.

Other drivers were given awards according to the length of their perfect records. R. K. Humphries, vice-president and general manager of the firm, said that the drivers' records were "particularly gratifying, because we know that a safe driver is a courteous driver". He emphasized that courtesy is a keynote in building harmonious and profitable relationships with customers.

Strandberg Opens Plants At Missouri, Canadian Sites

The Concrete Products Company of Kansas City, Mo., John Strandberg Sr., president, recently developed a 10-acre site at Harrisonville, Mo., into a subsidiary known as the Concrete Building Units Company. Products are concrete masonry units and prestressed slabs and beams. This operation is headed by John Strandberg Jr..

Eight steam-heated kilns are now in operation, producing both lightweight and heavyweight units. Block making machines, elevators, and batching equipment complete the Harrisonville facility.

Mr. Strandberg has also erected a temporary plant in Vancouver, B. C., where precast channel slabs are being produced. These slabs, 3 ft. wide, 8 to 14 in. deep, and in sizes up to 50 ft. long, will later be used in the construction of an extensive warehouse development in that city.

H. K. Griffith, former West Virginia road commissioner, has been appointed executive director of the National Bituminous Concrete Association, according to Sheldon Haynes, president. Mr. Griffith will maintain offices in Washington, D. C., where the association, makes its headquarters.

Thompson Named President Of Wisconsin Association At 25th Convention

Carl Thompson was elected president of the Wisconsin Concrete Products Association during the group's 25th annual convention in Milwaukee.

Other officers elected were Cecil Hemstock, first vice-president; Eugene Kleist, second vice-president, and A. W. Devos, secretary-treasurer.

Mr. Devos, a former director, resigned that position and was replaced by Edwin Bartlett. Raymond Minette was appointed pomotion chairman. George P. Andrew, Claude Murphy, and Robert Fricke are newly-named directors.

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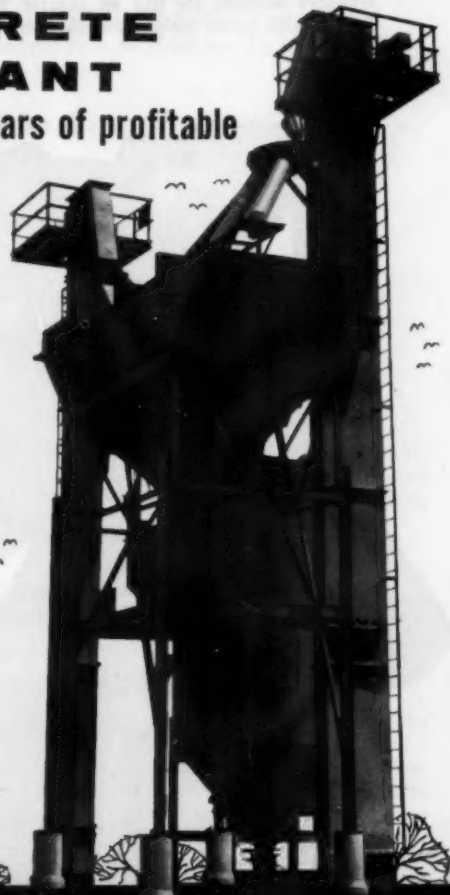
CONTINENTAL CONCRETE PLANT
for many years of profitable operation

CUSTOM-BUILT FOR YOUR SPECIAL NEEDS

Low cost, expert workmanship and our thorough experience mean for you profitable operation and dependable performance.

We will be glad to discuss your needs with you . . . by mail or in person. The demand for Continental Concrete Plants is strong—but they're worth waiting for!



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DIVISION OF CONTINENTAL BOILER & SHEET IRON WORKS
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- 2-Speed Operation . . . Both Mixing and Discharging
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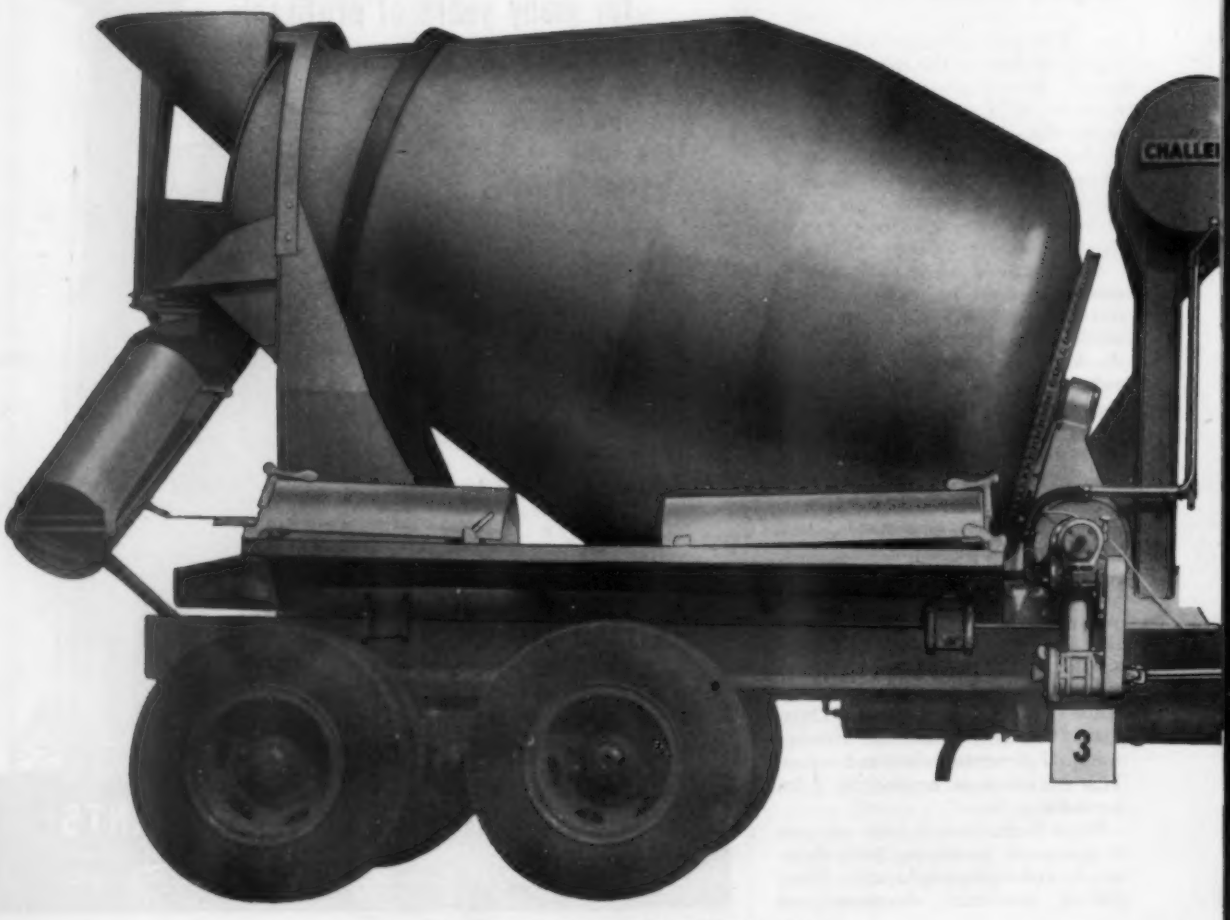

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CHALLENGE *Pacemaker* with

"ENGINE TAKE-OFF" Drive

for 5 • 5½ • 6 • 6½ Cubic Yard Models

Designed for mounting on most standard truck chassis, without alteration of truck cab, the Challenge "ETO" is a complete unit ready to go . . . nothing extra to buy! Powered by the truck engine, the Challenge "ETO" virtually operates for FREE! Accurate cost records show fuel savings as much as $450.00 per year per mixer . . . ALL NET PROFIT! Think what this would mean in terms of your mixer fleet.

See This Great NEW Challenge Pacemaker. On Display at the NRMCA Show . . . February 13-16.

COOK BROS. EQUIPMENT CO.

Exclusive National Distributor for the Only Complete Line of Truck Mixers on the Market . . . CHALLENGE, Value Standard of the Industry

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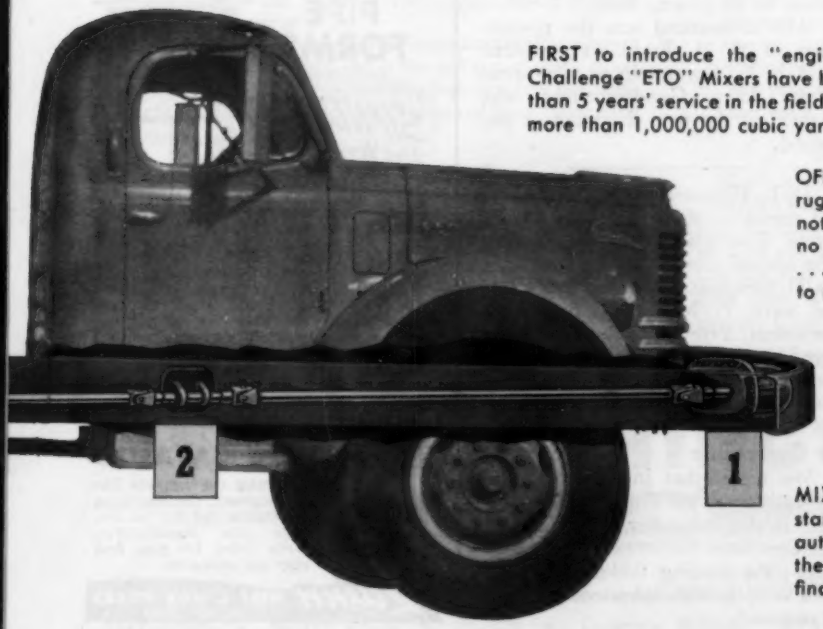


FIRST to introduce the "engine take-off" drive principle in 1951, Challenge "ETO" Mixers have been thoroughly developed during more than 5 years' service in the field, efficiently and economically delivering more than 1,000,000 cubic yards of concrete on all type jobs.

OFFSET FRONT DRIVE (1), enclosed in a rugged, lightweight housing, consists of a notched, high-speed high-strength belt . . . no slippage . . . no complicated adjustment . . . assures an uninterrupted flow of power to mixer drive at all times.

DRIVE LINE (2), installed on the outside of the truck frame where it is easily accessible for lubrication and inspection. Installation does not require alteration of standard truck sheet metal or a specially trained crew.

MIXER DRIVE ASSEMBLY (3), includes standard industrial input drive, standard automotive clutch and transmission, and the PROVED Challenge Gear Reducer to final chain drive.

SELL

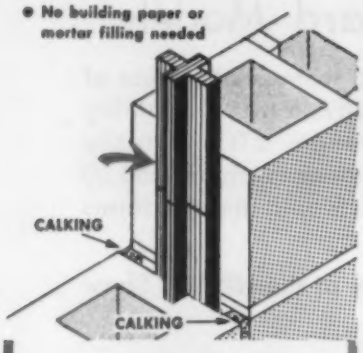
BLOK-JOINT

Patents Pending

for masonry wall

CONTROL JOINTS

- BLOK-JOINT may be used with any standard metal window sash block—no special blocks necessary!
- No cutting or sawing
- No building paper or mortar filling needed



INCREASING DEMAND ASSURES INCREASED VOLUME! More and more the use of control joints is being recommended in erecting masonry walls.

Carter-Waters BLOK-JOINT is a "cross-shaped" rubber extrusion which greatly simplifies the construction of masonry wall control joints. Made of "100 year life" rubber, it forms a secure interlock and adds stability to the wall.

VERSATILE! BLOK-JOINT is easily adapted to various types of wall construction—block walls, brick with block back-up, cavity walls and others.

DEALERS: Write TODAY for information about a profitable BLOK-JOINT dealership in your territory!

WRITE TODAY for FREE sample! Just fill in this coupon—

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2440 Pennway, Kansas City 8, Missouri
Please send me a FREE sample and specifications on the new Carter-Waters BLOK-JOINT.

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● This attractive patio, arranged by Anchor Concrete Products, Inc., Buffalo, appears on station WGR-TV, Buffalo, on every appropriate (warm and sunny) day. Colored Roman Roughs were used for the patio floor, and colored Celocrete lightweight masonry units appear in the fireplace and the shelf area. Although the patio was originally designed by Anchor for the Helen Nevills show on WGR-TV, the setting has been used for several other programs. Mention of Anchor Concrete Products is made each time the patio is used on a program. Good idea for some free publicity .

$100,000 Expansion Program Doubles Marble Cliff Output

A $100,000 expansion program was completed recently at Marble Cliff Concrete Products Company, Columbus, Ohio, where the addition of two wings to the plant building more than doubled the capacity.

Manufacturers of concrete blocks and related building materials, Marble Cliff added the two wings to house an elevator, weigh-batching equipment, and a new automatic block-producing machine. Another feature of the expansion was the addition of a new colored concrete stone to its present line.

Also announced was the re-election of F. H. Frank as president and N. C. Gorenstein as vice-president. Allen Gundersheimer was named as the new chairman of the board.

D. L. Hammel was recently elected president of the Minnesota Concrete Products Association during the annual convention held recently in Minneapolis. Other officers elected were T. M. Seppi, first vice-president; Pete Neitzke, second vice-president; Joseph Chalupa Jr., secretary; and C. J. Goodman, treasurer.

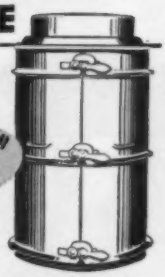
● Correction

We regret that in describing the operations of the Formigli Corporation in the December, 1955, issue of the CONCRETE MANUFACTURER (page 170), the loading tables under the two twin-tee slab cross-sections were transposed.

James Hammel, director of the Clay Center (Kans.) Concrete Block and Sand Company has been elected president of the Kansas Concrete Masonry Association. Lyle Morgan, a former member of the Clay Center Company, was elected secretary.

CALL ON Quinn For QUALITY CONCRETE PIPE FORMS

"STANDARD" The World Over



Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

Also Manufacturers of
QUINN CONCRETE PIPE MACHINES

Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA

Don't buy any other truck mixer till you've seen

Worthington MIXERAMA!

"On-Your-Job" demonstration shows why Worthington's HI-UP Truck Mixer does a better job

We believe the best way to prove to you that no other truck mixer can match a Worthington Hi-Up is to let you watch one at work.

We call this down-to-earth demonstration Worthington MIXERAMA. You'll call it the real test of truck mixer performance. Worthington distributors across the country want you to be their guest at one of these fascinating shows.

What will you see?

- You'll see exactly how Worthington Hi-Up Truck Mixers are designed for maximum payload.
- You'll see how fast it discharges . . . even with low-slump concrete.
- You'll see a really *rugged* transmission — *specifically designed* for a truck mixer. Single-lever operation.

Be our guest — or we'll be yours

You can watch Worthington MIXERAMA in one of two ways:

1. You can tell your Worthington distributor you want to see a Hi-Up in action on your own stamping grounds — loading at your plant, delivering concrete to your customers. And make sure you pick a day when you've got a *tough* pouring job to do!
2. You may attend a MIXERAMA in your area. The distributor will tell you where and when.

Call your distributor now

Make arrangements today to see Worthington MIXERAMA — either working from your batching plant or from a Ready-Mix plant in your area. You'll be glad you did — almost as glad as you'll be when you can call one of these hardworking truck mixers your own. Worthington Corporation, Concrete Machinery Division, Section R.5.1, Plainfield, N.J. R.5.1.

MIXERAMA'S on the way to you!

WORTHINGTON

If it's a Concrete Job, it's a HI-UP *Job*

Rock Drills • Wagon Drills • Pavers • Concrete Mixers • Portable Pumps • Portable Compressors

It's the **BALANCED *Synclinal* DESIGN**

that maks

MARVEL

Synclinal

FILTERS

American Industry's

A-1 CHOICE

BUMP TYPE (Cutaway)

LINE TYPE (Cutaway)

In the plants of America's industrial giants, as well as in smaller plants, Marvel Synclinal Filters are being installed on all types of hydraulic and other low pressure liquid circulating equipment. Marvels are chosen because of their excellent performance in protecting machines and increasing production by reducing down-time. They are proving again and again, their superiority in the one real test—ON THE JOB! The BALANCED Synclinal Design of Marvel Filters provides that all-important balance between maximum ACTIVE filtering area and sufficient storage space for filtered out particles—therefore, longer periods of productive operation are attained at the absolute minimum of maintenance. They meet J.I.C. Standards.

Not only plant operators, but also OVER 600 ORIGINAL EQUIPMENT MANUFACTURERS have recognized the superiority of Marvel Synclinal Filters and now install them as standard equipment.

Specify MARVEL SYNCLINAL FILTERS on New Equipment
Standardize with Marvel's on Existing Equipment

EASY MAINTENANCE
Both sump and line types may be easily disassembled, cleaned and reassembled by any workman, on the spot, in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

WATER FILTERS
Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

A SIZE FOR EVERY NEED
Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of monel mesh sizes range from coarse 30 to fine 200.

FILTERS FOR FIRE-RESISTANT HYDRAULIC FLUIDS
Marvels most recent development is a filter for the efficient filtration of all types of fire-resistant hydraulic fluids.

IMMEDIATE DELIVERY!
As in the past, Marvel continues to offer IMMEDIATE DELIVERY.

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Booth #1028
TOOL ENGINEERS
1956 Industrial Exposition and Convention
INTERNATIONAL AMPHITHEATRE
Chicago, Illinois
MARCH 19 thru 23, 1956

Catalogs containing complete data available on request

MARVEL ENGINEERING COMPANY
7227 N. Hamlin Ave., Chicago 45, Ill. PHONE: JUniper 8-6023

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated:

- ☐ Catalog #107—For Hydraulic Oils, Coolants and Lubricants
- ☐ Catalog #200—For Fire-resistant fluids
- ☐ Catalog #301—For Water

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City .....
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PQ-2

N.C.P.A. of Canada Meets In 7th Annual Convention At Windsor, Feb. 20-21

The seventh annual convention of the National Concrete Products Association will be held at the Prince Edward Hotel, Windsor, Ont., Canada, on February 20-21, 1956. Subjects ranging from architecture to outdoor advertising and from building loans to waterproofing will be presented by able speakers and in panel discussion groups in the two-day meeting, which has come to have more and more of an international flavor each year.

Speakers will include the following: W. P. Markert, director of promotion of the National Concrete Masonry Association, Chicago, Ill.; George Y. Mason, vice-president of the Ontario Association of Architects, who will discuss how concrete masonry can best be fitted to architect's requirements; Jarmin C. Craig, vice-president in charge of personnel, Chrysler Corporation of Canada, who will provide tips for improving labor relations; J. F. Pitts, of C. E. Marley Ltd., Windsor, Ont., who will speak on the effectiveness of outdoor advertising; D. C. R. Miller, general manager of Dow Corning Silicons Ltd., who will show a film on silicone waterproofings.

Others scheduled to participate in the program are Walter Ball, National Research Council; C. A. Sirrine, executive secretary, Concrete Products Association of Michigan; and J. A. Jones, director of loan insurance, Central Mortgage and Housing Corporation.

A panel discussion of concrete specialties will be headed by Robert Eakins, Century Concrete Products Ltd., Toronto. Another group under the chairmanship of V. S. Murray, president of Murray Associates Ltd., Toronto, will discuss precast and prestressed concrete; and George Scott, Scott Building Products, Welland, will direct a panel discussion of concrete brick.

Jesse S. Morie Sr. Dies— Veteran Block Producer

Jesse S. Morie, Sr., an owner of the Morie-Viola Company, a concrete block firm in Vineland, N. J., died on January 23 in a hospital of that city. He was 74 years old.

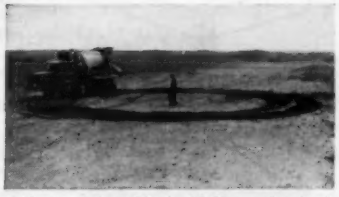
Mr. Morie came to the United States from Italy when he was ten years of age. He attended school and then worked in a shoe factory for ten years. Subsequently he was engaged in dairy farming. He founded his industrial sand, sand-and-gravel and concrete block business in 1915.

now! 18,000 lb. payload on each axle with the NEW 4-wheel drive

50-50 Oshkosh

READY-MIXED CONCRETE CARRIER

With 18,000 lbs. equal weight on each axle, the Oshkosh FIFTY-FIFTY conforms to maximum load limits in most states.
18,000 LBS.
18,000 LBS.



Fully loaded Oshkosh 50-50 ready-mixed concrete carrier demonstrating short turning radius and excellent flotation while making 25 consecutive turns in soft beach sand at Idlewild Airport, New York, New York.

Never before has there been a ready-mixed concrete carrier like Oshkosh's FIFTY-FIFTY! Up to 5 cubic yard capacity means greater payloads — increased profits! Powerful 4-wheel drive traction lets you spot loads under adverse conditions . . . get jobs competition can't handle! Two driving axles means lower maintenance cost and its 144" wheelbase means greater maneuverability. Easy to service — just lift side panels for instant access to engine! Write for details and how you can have an on-the-job demonstration without obligation!

Oshkosh 50-50 ready-mixed concrete carrier with high level pouring spout eliminates double handling of concrete. Photo taken at New Penn Daw School, Alexandria, Va.

Be sure to visit our exhibit at the National Ready Mixed Concrete Association Convention, Chicago, Feb. 13-16, 1956.

WRITE FOR FREE BROCHURE

This colorful, fact-filled book gives all the technical data and specifications of the new Oshkosh FIFTY-FIFTY ready-mixed concrete carrier. Write or wire for your free copy today!

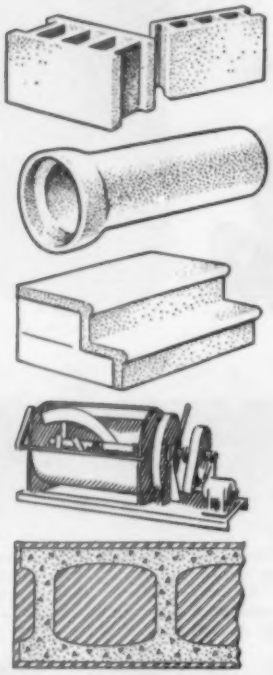
OSHKOSH 4 and 6 WHEEL DRIVE TRUCKS

OSHKOSH MOTOR TRUCK, INC.
OSHKOSH WISCONSIN

How Some Manufacturers Make *BETTER* Concrete Products at *LOWER* Cost, with *FLY ASH*

Fly Ash is a low-cost product. It is an extremely fine, wettable powder, mainly silica and alumina. Most of its particles are spherical in shape. It is a highly effective Pozzolan.

Many alert manufacturers, using a percentage of Fly Ash with the Portland cement, turn out a concrete of equal or improved qualities at a substantial saving in cost of materials.



Compressive Strength: Fly Ash Increases It

Many independent tests on concrete products made with a percentage of Fly Ash have shown equal or better 28-day compressive strengths as compared to those made with straight Portland cement. There is little or no reduction in 3-day strengths, especially where steam curing is used.

Sulfate Resistance: Fly Ash Improves It

Sulfate resistance is highly important in concrete sewer pipe. Tests on specimens of concrete containing a portion of Fly Ash showed greater resistance to the action of sulfate waters than did straight Portland cement concrete.

Finish and Texture: Fly Ash Makes Both Better

Comparisons show that concrete products made with mixes containing a percentage of Fly Ash have sharper edges and corners . . . smoother, more uniform surfaces . . . than products made with straight Portland cement.

Life of Machines and Moulds: Fly Ash Lengthens It

Fine, spherical particles of Fly Ash have a "ball bearing" action which increases flow and plasticity of the concrete and reduces abrasion. This means less wear on mixer blades, hoppers and moulds—longer life of your equipment.

Filling Moulds and Frames: Fly Ash Helps It

The greater plasticity of concrete containing Fly Ash reduces adhesion to pallets, and permits faster and more complete filling of moulds.

FLY ASH improves Compressive Strength, Texture, Finish, Sharpness of Edges and Corners, and Uniformity of Color of the Concrete.

FLY ASH increases "Green" Strength, Resistance of the Concrete to Penetration by Water, and Resistance to Action of Sulfuric Acid and Sulfates.

FLY ASH reduces Cost of Materials, Maintenance on Wearing Parts, Sticking to Pallets and Moulds, Cracking in Handling of the Concrete.

Write for Information or Technical Help

It costs nothing to get the facts on Fly Ash; it might mean a great deal in the success of your operation. Contact any of the following for specific information and technical data on use of their Fly Ash of proven performance.

CHICAGO FLY ASH COMPANY
228 N. La Salle St., Chicago 1, Ill.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pennsylvania

DETROIT EDISON COMPANY
2000 Second Ave., Detroit 26, Mich.

ATLAS FLY ASH, INC.
2450 William St., Buffalo 6, N. Y.

Des Lauriers Column Mould Co. Sold to Thomas Industries, Inc.

Des Lauriers Column Mould Company, Chicago, recently was added to the enterprises of Thomas Industries, Inc., Louisville, Ky., when the latter purchased the concrete support manufacturing concern.

Michael S. Palmer, president of Des Lauriers, will continue with the company, which will be operated as a separate division of Thomas Industries.

Ted J. Gutt Named to Post On Geo. Rackle & Sons Staff

Ted J. Gutt, former general manager of the Texas Stressed Concrete Corporation, has been appointed assistant to the president of the George Rackle and Sons Company, Cleveland, Ohio, structural concrete manufacturers for 85 years.

A native of Cleveland, Ohio, and a graduate of the University of Rochester, Mr. Gutt has been a pioneer consulting engineer and designer in the prestressed concrete industry. He was a consultant to the Automic Energy Commission and has worked with the Navy Department of Yards and Docks.

1956 Quality Concrete Course Held February 6-8 in Atlanta

The Quality Concrete Short Course for 1956, conducted by the School of Engineering of the Georgia Institute of Technology, was held February 6 through 8 at the Institute in Atlanta, Ga.

Purpose of this course was to provide producers and consumers with up-to-date information on the use and design of concrete masonry. Cost analysis of operations and economic factors affecting the use of concrete masonry were also considered.

Robert Pierce Gregory, 77, owner and operator of the Gregory Concrete Products Company in Louisville, Ky., died recently. Mr. Gregory formed the company in 1925 and managed it until 1940, when he retired. His son, Marion, took over management of the concern upon his retirement.

Zachry Construction Company of Corpus Christi, Tex., has announced plans for the construction of a ready-mixed concrete plant on the Wesley E. Seale Dam site near Corpus Christi. The ready-mix plant will permit on-the-spot production of the large volume of concrete required for the erection of the dam.

R/Y Ready Mix

By Harry F. Thomson

Role of Fly Ash in Precast Products

A RECENT article in this column discussed some of the characteristics of fly ash which have proven beneficial in the production of structural concrete. The same characteristics may also benefit concrete products, but in varying degree, due to the class of concrete used, the method of curing, and other factors. Although compressive strength is a common basis for evaluating a concrete for either structural or product use, there are fields in which other features are important.

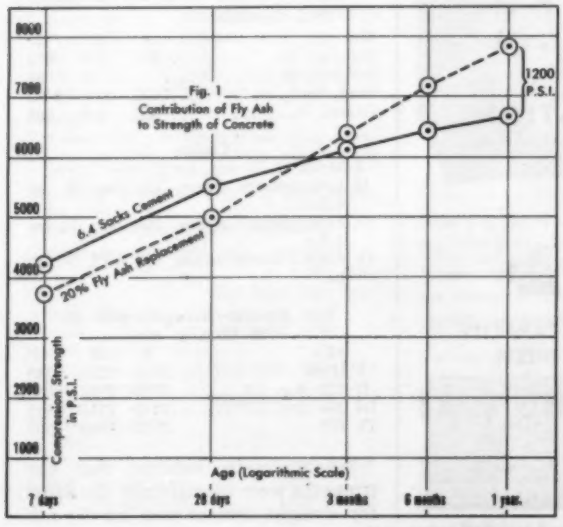
Fly ash may be defined as the very fine solid residue (ash) from the combustion of pulverized coal. Normally, it escapes (flies) through the stack with the flue gases, but it can be trapped by mechanical means, or by an electrostatic precipitator. At present the chief commercial supplies come from large electric power plants in the East and Middlewest; but large industrial steam plants which burn pulverized coal also produce fly ash, although they may not be equipped to recover it. In the West there are various volcanic ashes, such as pumicite, which have somewhat similar composition and characteristics.

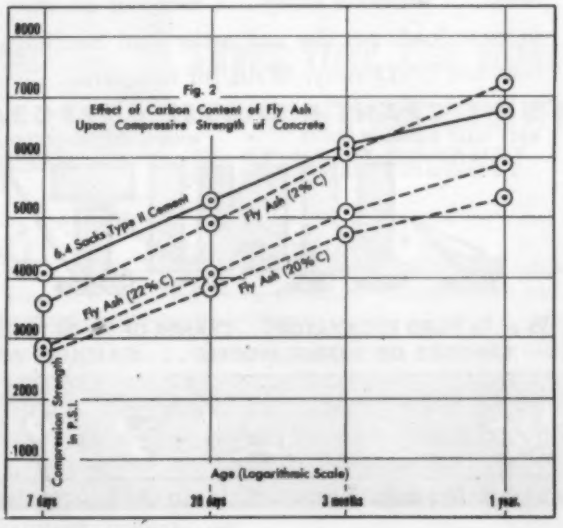
The two features of fly ash which are of greatest interest in connection with concrete are that it is composed chiefly of very fine glassy particles and that it possesses pozzolanic activity. The material is usually finer and lighter than portland cement and consequently is dusty to handle. The fine globular particles, which are minute pellets of glass, act in a concrete mix like ball bearings between pieces of aggregate, and thereby improve workability. The pozzolanic activity refers to the affinity of the amorphous silica in the ash for the lime freed by the hydration of the cement; this action has a cementitous effect, which adds strength to that created by the cement alone. At normal temperature this strength action is slower than that of cement but continues for a long time. At temperatures above normal the speed of the action is accelerated.

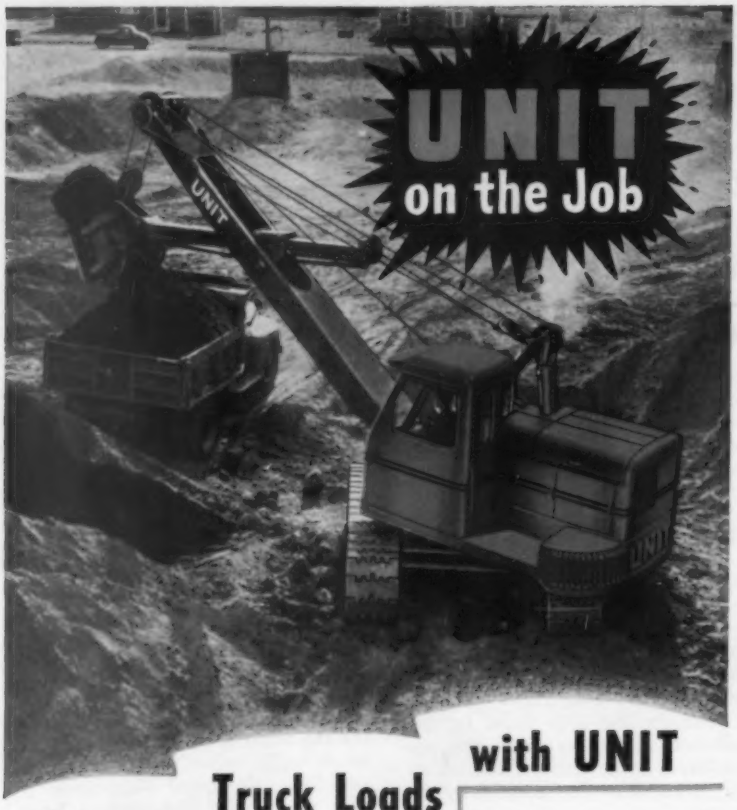
When good fly ash is available at a price appreciably below the cost of cement, there is a growing practice of producing structural concrete with 20 to 25 percent of the cement replaced by an equal weight of fly ash; with this combination, the strength of the concrete at 28 days with normal curing may be about 10 percent below the strength with straight cement. But if 1¼ to 1½ lb. of fly ash is used to replace 1 lb. of cement, the strength at 28 days may approximate that of concrete made with straight cement, and at three months or longer the strength may exceed the straight-cement strength by a considerable margin. Fig. 1 illustrates this relationship for a pound-for pound replacement of 20 percent of the cement; the data are taken from a graph used with a recent paper prepared by Professor Raymond E. Davis, discussing the use of fly ash and other pozzolanic materials in concrete pipe.

In general, although there may be exceptions, fly ashes with good pozzolanic action are low in carbon and are very fine (specific surface about 3,000). An A.S.T.M. specification for fly ash for use as an admixture in concrete, designation C350-54T, names 12 percent as the maximum loss on ignition. Various ashes range from ½ to 30 percent carbon, but less than 7 percent is considered low. Although the basis for the influence of carbon content on strength, other than dilution, is not clear, the usual observation is that ashes with high carbon have low pozzolanic action.

Figure, 2, which is also based on the paper by Professor Davis mentioned above, shows comparable strength curves for straight cement (in this case Type II) and 20 percent replacement of fly ashes containing 2, 22, and 30 percent carbon respectively. The higher strength of the concrete containing fly ash with low carbon content will be noted. Also note that the latter two







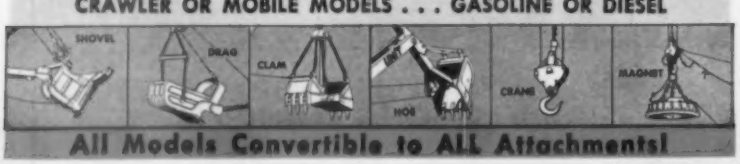
Step-up Truck Loads with UNIT

Here's a UNIT ¾ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

UNIT CRANE & SHOVEL CORPORATION
6329 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

UNIT

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

A 7312-⅗-PC

fly ashes of higher carbon content fail to meet A.S.T.M. requirements.

Many manufacturers of concrete block in the East and Middle West, where good grades of fly ash are available, are utilizing its special characteristics for the betterment of their product. The usual method is to re-design the mix by including fly ash to replace from 25 to 35 percent of the cement. Such replacement is commonly on a pound-for-pound basis, though some manufacturers used 1¼ to 1½ lb. to replace 1 lb. of cement.

In concrete mixes below the plastic limit, such as block mixes, the water-cement ratio does not apply. Actually, the manufacturer tries to use as much water as he can, short of causing slumping of the finished product in off-bearing. Frequently, pound-for-pound replacement of 20 to 35 percent of the cement by fly ash permits the use of more water, because as fly ash is lower in weight per cubic foot than cement—an equal weight means many more fine particles which must be coated with a film of water. Sometimes, especially in curing at elevated temperatures above 170 deg. F., this procedure has resulted in increased strengths. Another result is a finer "grain" in the surface of the block, which has a potential sales appeal.

As stated, the effect on the strength of the block from replacement of a part of the cement by fly ash may be influenced by the method of curing. Professor George W. Washa of the University of Wisconsin has reported the following test results with cubes (whose comparative strengths closely correlate those of the concrete block) containing different replacements of cement by fly ash and cured under different conditions:

Mix	A	B	C
Cement, lb.	365	310	274
Fly ash, lb.	--	50	91
Sand, lb.	2690	2690	2690
Gravel, lb.	565	565	565

Curing

I Moist at 73 deg. for 7 Days
II Low-pressure steam, 120 deg. F. for 4 hr.
III Low-pressure steam, 160 deg. F. for 4 hr.
IV High-pressure steam, 150 p.s.i. for 12 hr.

Test Results—Strength, p.s.i. at 28 Days in Air

Mix	A	B	C
I Moist	2345	2295	2340
II 120 deg. LP	2590	2780	2635
III 160 deg. LP	2340	2310	2445
IV HP	3720	3830	3500

These results indicate that the strengths were substantially the same for straight cement and for fly ash

replacement up to 25 percent of the cement, under curing conditions up to 160 deg. F., and that with autoclave curing the 28-day strengths of the fly ash mixes were again substantially the same as with straight cement. But as a result of the pozzolanic activity discussed above, the strengths at longer ages, say three months or a year, would be expected to be much higher for the fly ash mixes than for straight cement.

In a series of tests made by a commercial laboratory the strengths of blocks made with various replacements of fly ash as high as 40 percent of the cement, were observed. In the plant where these tests were made the curing cycle was at 170 deg . F. and 100 percent relative humidity for 6 hours, with warming and soaking periods of three hours each. Materials and gross-area strengths were as follows:

Mix	A	B	C	AA	BB
Materials					
Cement, lb.	440	375	330	330	350
Fly ash, lb.	110	175	220	225	200
Sand, gravel mixed, lb.	4500	4500	4500	4650	4650
Stone dust, lb.	500	500	500	350	350
	A	**B**	**C**	**AA**	**BB**
Compressive Strength, p.s.i					
1 day	..	..	..	1245	1210
7 days	1343	1273	1148	1445	1370

These high strengths reflect the aid of high-temperature curing to the chemical reaction between the fly ash and the lime liberated by the hydration of the cement.

The following data summarize tests by another Midwestern manufacturer in his own well equipped laboratory on block made with fly ash replacements up to 50 percent of the cement; the series included a lime-fly ash combination in lieu of any cement.

Mix	A	B	C	D
Materials				
Cement, lb.	330	265	220	..
Fly ash, lb.	100	175	220	165
Lime, lb.	..	..	..	165
Sand, lb.	2300	2300	2300	2300
Gravel, lb.	2300	2300	2300	2300

Curing Methods

Regular—170° by steam coils plus injections of live steam; then soak; cycle 20 hr.

Autoclave—pre-set 2 hr.; 150 p.s.i. steam for 5 hr.

Two stage—regular, then autoclave

Compressive Strength, p.s.i. (averages)

	1 day	2 days	28 days	293 days
A mix, regular cure	1400	1560	1670	
B mix, regular cure	1620	1690	1970	2130
B mix, autoclave cure	1910	2390	..	..
C mix, autoclave cure	..	2310	..	..
			2 days	**3 days**
B mix, 2-stage cure		2220	..	
D mix, 2-stage cure		1215	1440	

It will be noted that these strengths in p.s.i. were for the gross area of 8- by 16-in. cored block, whereas the strengths reported by Professor Washa were for concrete cubes.

By utilizing the pozzolanic action of fly ash, a block manufacturer may accomplish some reduction in cost of materials, as the cost per pound of fly ash within a reasonable haul from a producing plant is usually lower than the cost of cement. But at a time of cement shortage an even more important factor may be the result of "stretching" of available cement by using in a mix two-thirds to three-fourths as much cement as usual and substituting fly ash for the remainder.

Another interesting possibility of applying the peculiar properties of fly ash is the use of lime with the fly ash in replacing a part of the cement in autoclaved products. Studies in this field have been conducted by John K. Selden of the Research Foundation, University of Toledo. In one combination of materials with expanded slag as coarse aggregate in a basic 1:4 mix by weight, with cementitious proportions of 33 percent, 53 percent fly ash, and 14 percent lime, the autoclaved block

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showed a strength of 1,500 p.s.i. gross area in 2 days and a yield of 35 blocks per sack of cement. In another combination with gravel aggregate and cementitious proportions of 75 percent cement and 25 percent fly ash the strength was very high, exceeding 2,500 p.s.i., which was the limit of the testing machine used. Mr. Selden's report indicated that as much as two-thirds of the cement "can be replaced by lime-fly ash mixes in autoclaved block of certain aggregates to secure not only improved properties but also marked increases in yield."

Concrete pipe is another field in which the properties of fly ash as an admixture have offered advantages in a number of respects. In some localities where very hard aggregates are available and the specified minimum is 6 sacks, any mix for pipe produces adequate strength; and the possibility of replacing any cement with fly ash is not a factor. However, even in such areas there is a growing practice of including fly ash as an ingredient in the mix solely on the basis of improvement in quality.

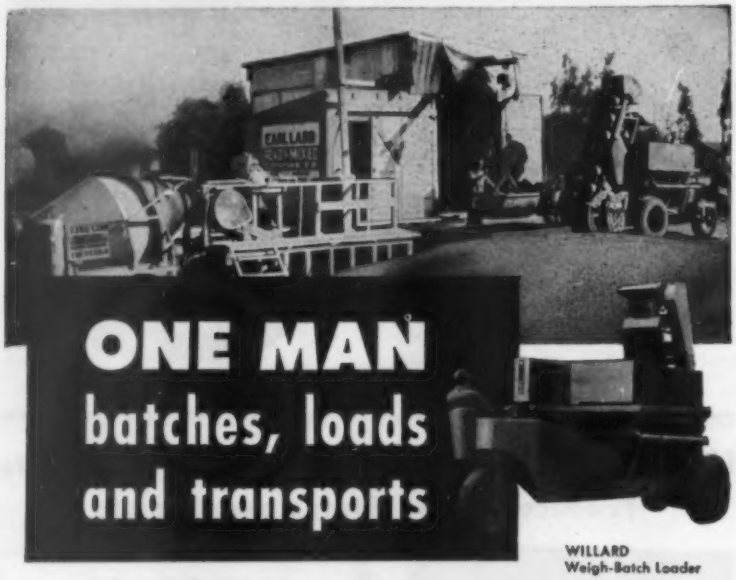
Under wet storage conditions pipes containing fly ash continue to gain in strength and watertightness for a long time. The useful life of pipe carrying water under pressure is considerably prolonged by the inclusion of fly ash in its manufacture, first because of lower permeability and second because of the reduced effect of leaching action, which leads to deterioration in strength. In the manufacture of packer-head tamped pipe the presence of very fine fly ash in the mix aids in obtaining a product of more uniform quality because of improved workability and a reduction in segregation.

Obviously, fly ash is not a substitute for cement. Enough cement must be present to supply lime for the pozzolanic action. Cement is also needed to provide strength at early ages. Except where curing is done at elevated temperatures or by autoclaving, the pozzolanic action is slow and its contribution to strength may not be significant until after 28 days.

Proper design of concrete mixes for block manufacture has been troublesome because these dry mixes do not follow the same laws as plastic mixes. One of the best discussions of the subject is National Concrete Masonry Association Technical Bulletin No. 6, *Discussion of Concrete Block Mix Volume and Yield*. Most block manufacturers, either by the scientific approach or by trial and error, have established mixes using straight portland cement which have given satisfactory yields and strengths.

When curing temperatures range from 140 deg. F. to 160 deg. F., most manufacturers have found that pound-for-pound replacement of cement by a fine, low-carbon fly ash up to 25 percent is feasible with little or no change in aggregate proportioning. Curing up to 190 deg. F. has in some instances allowed replacement up to 35 to 40 percent, but in this case reduction in fine aggregate with corresponding increase in coarse aggregate usually proves beneficial. See mixes AA and BB in the second of the accompanying tables for illustration of this principle.

The other important benefits of fly ash as an admix in concrete, such as greater workability, lower permeability, improved appearance, and higher ultimate strength, can be of advantage in all precast concrete products. Of special significance to pipe manufacturers is the added resistance to the action of sulphates and weak acids which its use produces in concrete pipe.



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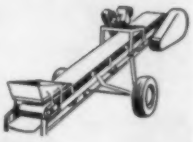

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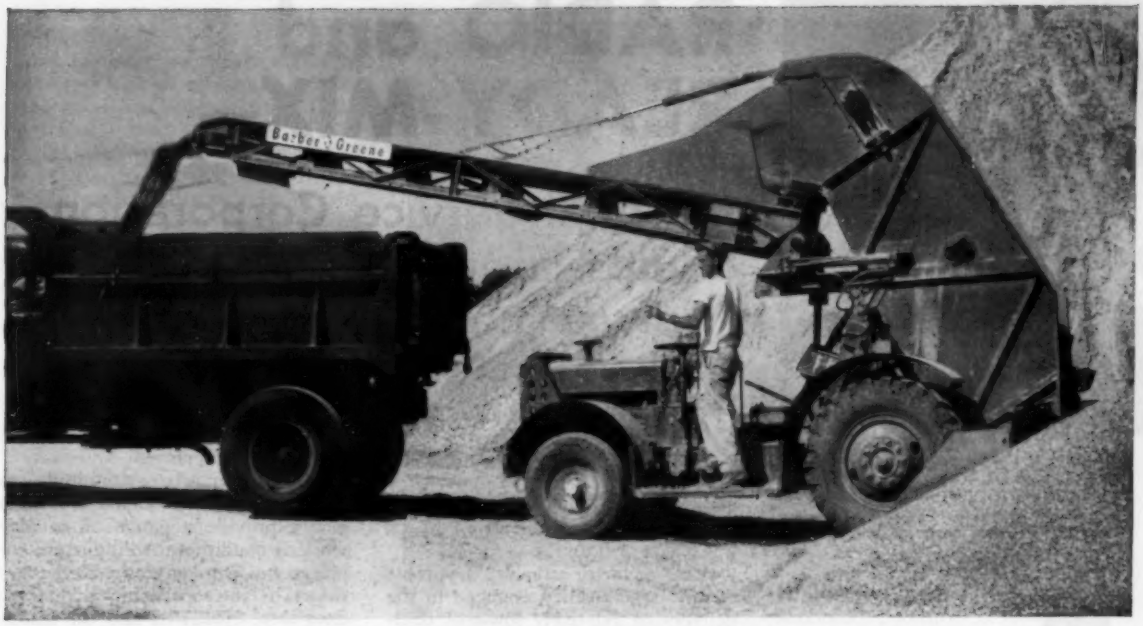

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Frank Kalebic, dispatcher at Yard 18, gives instructions to a driver miles away. Note the transmitter on the shelf, the desk cabinet containing the receiver and power supply, and the handy desk-type microphone.

RADIO and READY-MIX—

Material Service Corporation equips large fleet with two-way units

By ROY L. PECK

Another ON THE SPOT Report

TWO-WAY radio and ready-mixed concrete fleets are getting to be closely related terms these days, especially in the large urban centers where expediting truck-unit movement is a major factor in attaining profits. Material Service Corporation's huge fleet of over 200 truck-mixers units, operating from 11 strategically located yards in Chicago, presented a problem in control which has been largely erased by equipping all units with R.C.A. two-way mobile radio sets.

Eldon R. Fish, manager of the ready-mix division, demonstrates palm-type microphone in his car at Yard 1. Controls are mounted under the dash, with a flush loudspeaker on the dash board.

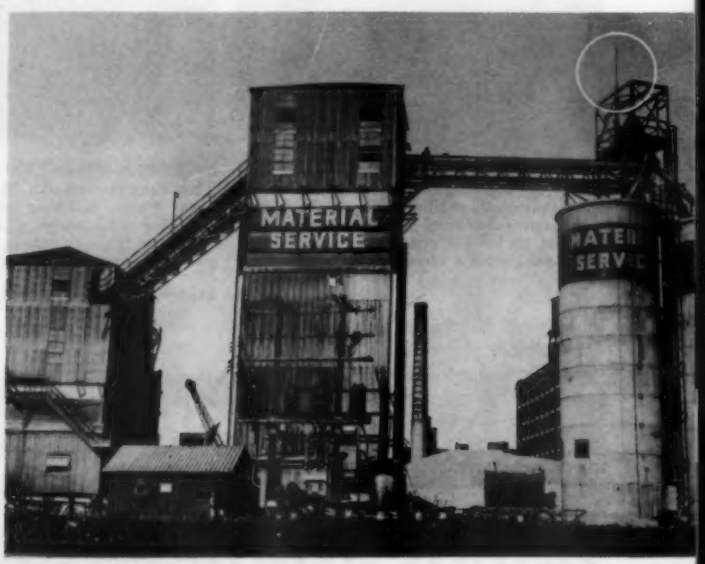
Base stations installed at these yards allow each dispatcher to control effectively the movement of the truck units assigned to his yard.

A major factor affecting the profits of any large business engaged in the delivery of relatively low-cost commodities is an efficient hauling system. This factor ranks in importance with any production phase, and anything which will increase its practical efficiency is welcomed. It is not surprising, therefore, that the installation of two-way mobile communication equipment in ready-mixed concrete trucks has greatly increased within the last few years. So much so, in fact, that today it has become practically indispensable in that type of operation.

Material Service Corporation management recognized this fact some years ago, and proceeded to make a thorough, detailed analysis of radio application at Yard No. 18, at Lyons, Ill., a semi-suburban community to the southwest of Chicago, which would provide a gauge of average working conditions. An industrial engineer was employed to record every detail in the operation, and these data were evaluated and the results interpreted in terms of profit from the investment in the radio installations. In this study several makes of two-way radio units were utilized and compared. Permission to operate was under license from the Federal Communications Commission. Some units were on the 25-50 megacycle band at the start, but later all units were on the 450-470 megacycle band, which is not affected by the increasing sun-spot interference.

Shortly after this precise study

Yard 1 of the Material Service Corporation, Chicago, Ill., showing the position of the radio antenna atop the material silo (circled). There is a base station at 11 of the company's yards.



had been completed, it was decided that a large proportion of the truck units in the other yards would be equipped with mobile units, and engineers of the Communication Products Department of the Radio Corporation of America were invited to make a complete analysis and offer their recommendations as to the proper units to use. In eight of the yards base stations were established, using the R.C.A. Type CSU-15-BR Carfone F.M. desk-mounted sets to provide two-way radio communication between the yard and the mobile units. Type CMU-15-AL-2 mobile radio sets were installed in the truck units and other vehicles, numbering about 174 units in all.

Recently the decision was made to extend this service. Three more base stations and 20 more mobile sets of the above model types were ordered installed so that in the near future the company will be operating 11 base stations and 194 mobile units. As the company's ready-mix operations expand, it is contemplated that other base stations and truck units will be added.

These units all operate on the 450-470 megacycle band, the transmitters having an R.F. power output of 15 watts and a practical working range of from 15 to 25 miles. At each plant the separate transmitter, receiver, and power supply are housed in an attractive desk cabinet which requires little space on a desk or table. The sets include a desk type microphone, ready for installation and operation.

In the vehicles these radio units are assembled in a sturdy, compact drawer-type case which provides easy access for maintenance. The radio is operated from a dash-mounted control associated with a high-efficiency elliptical loudspeaker and palm-type microphone with plug-in cable. Power for operating the unit is obtained from the vehicle battery, and a short "whip" antenna completes the over-all operating unit. No heavy-duty generators and special truck batteries were required in these installations. The equipment is ordered for either 6- or 12-volt operation, and each unit is easily converted from one to the other by rotating the vibrators and changing two plugs and two fuses.

In the M.S.C. operation each ready-mix yard functions almost as a separate company, in that the dispatcher controls the movement of the trucks working out of the yard, and no dispatching is done from a central point. In addition to the majority of ready-mix trucks which

Another view in Yard 1, showing the storage and plant mixer building and ready-mix trucks loading. This yard is very near the downtown Chicago area.

are radio-equipped, the automobiles of each yard supervisor and those of Eldon R. Fish, manager of the ready-mixed concrete division of the company and his assistant, have mobile radio sets installed.

As described in earlier issues of PIT AND QUARRY, the operations of Material Service Corporation — reportedly the largest building supply firm in the world—require tremendous amounts of materials for ready-mix and other uses, which are brought into the Chicago yards from five crushed stone quarries and four sand and gravel plants by a large fleet of barges and also by trucks.

Almost all Material Service yards are located at points along the Chicago River and its north and south branches. These sites were carefully planned long ago to allow minimum hauls of materials to jobs. In fact, it has been stated that the average round-trip haul of M.S.C. ready-mixed concrete trucks is only 3 or 4 miles.

Approximately $60,000,000 worth of materials is moved to jobs annually. Traffic within the urban areas served by the majority of the plants naturally presents many problems resulting in expensive delays to truck movement. The R.C.A. system of two-way radio communication has become an indispensable part of the equipment used to eliminate much of this delay.

In a recent interview with Alfred Rodriquez, assistant vice-president of the company, and Mr. Fish, numerous reasons were established for using two-way radio in their ready-mixed concrete operations. Instant communication between the driver of the truck and his dispatcher, and positive control over the driver's operation are the two basic essentials governing most of the ways in which the company benefits by radio. Servicing the vehicles at times of breakdowns is perhaps one of the most important jobs more speedily accomplished with the aid of this type of communication. No time is lost, for example, when the driver needs such help to avoid a very costly jackhammer removal of set-up concrete in the drum of a mixer truck which cannot move. Two-way radio in the service trucks eliminates delay, when these units move directly to each successive breakdown or repair job reported, instead of wasting time by returning to the maintenance garage for directions.

Mixer trucks can be diverted from one job to another when delays occur at the first job which would prevent discharging the load. The dispatcher knows what kind of concrete is in each truck, and can readily pick another job using the same concrete without incurring the delay involved in telephoning the yard for directions. A tighter delivery schedule can be followed, using just the right number of trucks for any particular job, and no more than required, when there is close control of trucks. Mr. Rodriquez estimated that this way of making the trucks more productive increases the

One of the ready-mix trucks taking a load of concrete. Note that the driver is remaining in his seat, advance notice of load requirements having been previously determined by radio.

efficiency of the operation by about 15 percent; also that ten radio-equipped trucks are equivalent to 11 trucks without such equipment.

Operations within the plant yard are speeded up when the truck unit, returning from a job, can inform the dispatcher just what is needed on the next load. Overtime is reduced at the end of the day. The plant can be closed down from 10 to 15 minutes earlier because radio makes it unnecessary to wait for the last truck to return to the plant with advice as to the completion of the job placement of concrete. Essentially, the concrete engineer, dispatcher, or supervisor can virtually be on the job through radio communication *via* the truck unit. This relieves the driver of making decisions as to what will be required to finish a pour, or of resolving other possibly important disagreements with the contractor's personnel. All such aid to the driver gives him a feeling of security, makes his job easier, eliminates telephone time-waste, and otherwise relieves him of taking responsibilities which should properly be functions of executive personnel. No time is lost, no tension is built up if the dispatcher can give the contractor positive and accurate information regarding deliveries, and can receive from him estimates as to the probable concrete demand.

Overall operating efficiency is increased through the positive control of the trucks after they leave the plant. This works both ways, in helping the dispatcher or supervisor keep an ever-alert eye on the driver and in affording the driver the opportunity to give the office accurate information on mileage, times of departure, arrival, pouring, loading, etc. The last items also provides an aid to accurate time study and cost keeping.

Direct communication with the driver enroute from the job may expedite deliveries in emergency periods, when one of the plants has a temporary breakdown, and the driver can be instructed to go to another plant. In fact, Mr. Fish claimed that a very substantial saving in mileage can be effected by this ready shuttling of truck units from one plant to another under emergency demands.

While the foregoing has pointed out savings to the ready-mixed concrete producer through two-way radio adaptions, there are other improved services of radio which are readily recognized by the contractor-customer. Material Service Corporation holds to the concept that a satisfied customer is its best advertisement. When such customer good will can be bettered by closer control over the quality of concrete furnished, or by meeting delivery schedules 100 percent of the time, or by reducing the contractor's overtime or lost time in waiting for loads of concrete which have not arrived at the job as promised, that a customer becomes a booster.

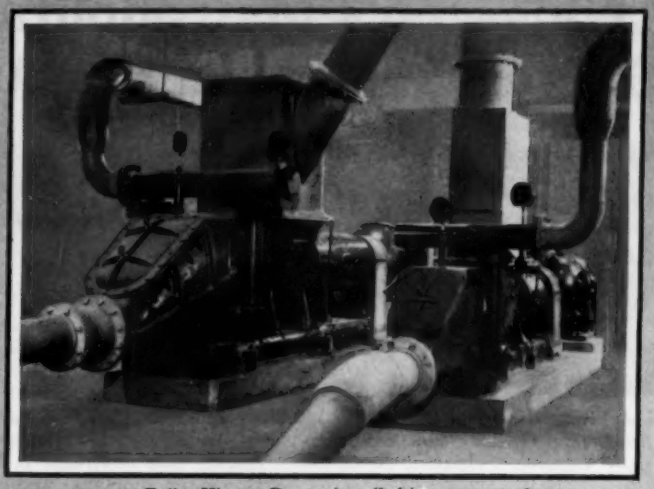
In turn, commendation of this type from the contractor affords the ready-mixed concrete salesmen new ammunition in extending their service to the few remaining contractors who still job-mix. This distinctly competitive edge enjoyed by M.S.C. salesmen often permits them to get information about a coming job and get in touch with the contractor hours before other companies know about it. Good ready-mix drivers are ever alert to spot a new job opening up, and it takes only seconds to relay this information to the office.

At the outset, it was not possible to determine accurately what the drivers' reactions to radio installation would be. Mr. Rodriquez stated that it was felt some drivers might judge the installation an attempt to spy on their work, but this idea quickly vanished when the drivers found out that "control" can also mean "aid" to their actions. He said he felt that no driver would be without radio after he has used it for a few months. One experience with a flat tire under a loaded drum of concrete, sometimes occurring miles from a telephone, is mighty convincing to the average driver, he said. The ability afforded the driver to sit in his cab as he comes in for the next load, instead of jumping out into the messy ground around most loading plants is a further convincer.

Mr. Rodriquez was not reticent in stating that the use of radio-equipped units has helped the company's public relations considerably. He related several stories about how the two-way communication had been used on several occasions to report accidents involving other than company trucks, which in one case saved the life of an injured person. In noticing the eye-catching red and yellow trucks of the company, the public also notes that the radio antenna on each marks it as strictly modern equipment. While difficult to evaluate, public reaction is always favorable to a producer with the latest equipment; and this counts when a decision is to be made as to who gets the ready-mixed concrete order. Material Service Corporation officials feel that many an order can be traced back to the fact that their radio-equipped trucks, affording the contractor a direct economic gain, were chosen for a job, rather than units of another company whose trucks are not so equipped.

Mr. Rodriquez feels that one of the most important considerations in the choice of radio is the ability of

(*Continued on page* 186)



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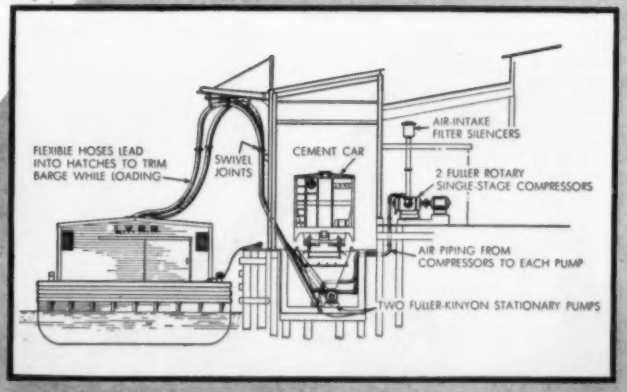
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P-161
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Livingston's Metropolitan Batch Plant Serves Downtown Los Angeles

special precautions prevent aggravation of local smog conditions

Another ON THE SPOT Report

THE newest, completely-automatic batching plant for ready-mixed concrete in the Los Angeles area was placed in service during the summer of 1955 by the Livingston Rock & Gravel Company. Capable of charging about 150 cu. yd. into the truck-mixers hourly, the operation, known as the "Metropolitan Plant," is the only ready-mix plant in the downtown area. It was erected on a site close to the Los Angeles Union Station and near the hub of the new freeway system.

By HARRY F. UTLEY

In addition to its advantageous location from the standpoint of the consumer, the plant is also about midway between the concern's two principal aggregates-producing plants, one situated near Sunland to the north, the other at Azusa to the east. Acquisition of the desired site in a built-up area required many months of evaluation and negotiation by Carder Livingston, head of the concern, and members of his staff.

General layout of the new Metropolitan facilities was worked out by Howard Marsh, production manager, and Ed Misenhimer, chief engineer. Structural and other details were in the hands of the Los Angeles engineering firm of Arthur E. Howland. Conveyors, hoppers, and structural members were in large part fabricated in the company's own shops in Long Beach, and company personnel supervised the erection and installation of the equipment.

The plant proper is built around a 300-cu. yd. Butler aggregates bin divided into five compartments, four of 50 cu. yd. capacity for coarse materials and a 100-cu. yd. sand compartment. Cement is delivered by two company-owned Peterbilt bulk-cement truck-trailers which also serve Livingston's other batch plants in Long Beach, Artesia, and Montebello. The cement is discharged directly into a 150-bbl. below-ground hopper, then transferred by screw conveyor to the boot of an elevator, and lifted either to a 310-bbl. active storage bin or to a 1,600-bbl. reserve storage silo alongside the plant. The active and reserve supplies are also interconnected by screw conveyors.

A 12-in. batching screw, driven by a 10-hp. Fairbanks-Morse gearhead motor with a magnetic brake, transmits the cement directly from the active storage bin to the cement weigh-batcher.

Aggregates are delivered by the company's fleet of truck and bottom-dump telescopic-trailer units to two 35-ton below-ground self-cleaning hoppers, one for sand and the other for coarse aggregates. A 30-in. wide, 3-flight system of belts carries the aggregates from the receiving hoppers to the plant bins *via* a switch-back conveyor layout, necessitated by the limitations of the site.

A 30-ft. flight transfers aggregates from the hoppers to a 60-ft. conveyor running at right angles. The final transfer then is made to the main 180-ft. inclined belt conveyor, reversing the direction of flow and running up to the top of the plant bins 65 ft. above ground level. A remote-controlled turnhead distributes the materials into the proper compartments.

Plans have been made to install the ground-storage facilities for a reserve supply of aggregates above a belt-conveyor recovery tunnel to provide a free-flowing storage of 2,500 tons at all times.

Fully-automatic C. S. Johnson weigh-batching equipment provides a selection of 24 preset mix designs. The set-screw turrets which preselect the various mix components automatically and electrically by weight are quickly interchangeable by the operator. As soon as he presses a single pushbutton, all the ingredients are batched automatically without further attention. All gates and valves are interlocked; pen recorders keep an accurate record of each batch on a yard-wide roll of chart paper behind glass, immediately below the dial scales. The pens record the weights of the materials in each batch, as well as the time interval between batches to correspond with the arrival and departure of the truck-mixers.

Surface moisture in the sand is determined by a sensing bar extending into the 7-cu. yd. weigh-hopper and operating in conjunction with a C. & W. electronic moisture meter, a compensating scale beam, and the water-measuring control to insure the correct specified water content in each batch.

New metropolitan plant of Livingston Rock & Gravel Company near downtown Los Angeles. Batching capacity is about 150 cu. yd. hourly. The silo in the foreground holds a 1,600-bbl. reserve of cement.

A grizzly spans the 2-compartment aggregate receiving hopper. The switch-back conveyor system shown carries the aggregates to the bins 65 ft. above ground.

Truck-mixers are charged under dust-free conditions by an air-ram-operated collecting hopper which fits tightly against the mouth of the mixer loading hopper.

Liquid admixtures are received in bulk, pumped to any of three tanks high above the plant, and withdrawn into the batch by gravity. A Liquimatic Systems automatic metering and dispensing unit measures the required amount of additive. This is introduced into the mixing water at the water-weighing batcher, assuring both accuracy and thorough blending. An air-entraining agent is frequently used, whether specified or not, as a guarantee of quality.

Smog-conscious Los Angeles has very strict rules which all industry must observe to keep the discharge of dusts, as well as fumes, from contaminating the atmosphere. Before the new Metropolitan plant could be built in the downtown area, where air pollution usually strikes hardest, its plans had to be subjected to the rigid inspection of the Air Pollution Control Board to assure that its operation would be practically dust-free at all times.

In achieving this goal, the company enlisted the aid of the Likens Manufacturing Company in the design and fabrication of a system which would smother any dust that might arise during batching and charging the mixer trucks. The result was a gathering hopper under the weigh batcher which is lowered onto the loading hopper of the mixer to form a relatively tight seal during charging, then raised again after the drum is filled. A 3-in. perforated pipe inside the gathering hopper introduces the mixing water and makes the transfer practically dust-free. In addition, there is a series of fog-nozzles around the perimeter of the hopper to create a curtain of mist during the charging operation, to capture any fine dust which might escape from the hopper or the mixer drum.

The dustless charging method was designed to work automatically with the company's 6½-cu. yd. Challenge mixers, which are used almost exclusively at this plant. About 40 units in all, some smaller than the 6½ yarders, make up the entire fleet, and most of them are of Challenge manufacture.

Air for the various pressure-operated devices and controls is furnished by a Quincy compressor housed in an underground tunnel for cleanliness and elimination of noise.

The bin structure and batching floor area are enclosed with corrugated Transite siding, with metal sash for the windows. The main batching floor is 18 by 29 ft. in area, with two sound-proofed rooms adjoining. One serves as the dispatcher's station and also as the plant office; the other is equipped for the exclusive use of inspectors. Four or five heavy glass ports are set in the floor to provide good visibility from the batching floor to the truck-mixer driveway below. At ground level, adjoining the electrical-control room, are the quarters for the drivers and plant personnel. The management is also planning to build a truck-maintenance garage on the site. The new plant, along with the company's other batching plants, operates under the general supervision of Bill Woodward, manager of the concrete division. Main offices are located in Long Beach.

A view of the batching-floor, showing the dial scales and pen recorders behind glass at the left.

Los Angeles Masonry Assn. Publishes Design Manual

A new publication, *Concrete Masonry Design Manual,* is now available to concrete masonry construction designers. Issued by the Concrete Masonry Association of Los Angeles, Calif., this handbook is a valuable reference for architects and engineers who design concrete masonry structures.

The 130-page loose-leaf manual is divided into nine sections, each with its own foreword. The book is well illustrated with numerous detail drawings to scale.

The tables and charts in Section 8 will eliminate most of the arithmetical drudgery of preparing engineering calculations.

Copies may be obtained from the Concrete Masonry Association, 3250 West Sixth Street, Los Angeles 5, Calif., at $5 each.

Robert Pierce Gregory, 77, retired owner and operator of the Gregory Concrete Products Company of Louisville, Ky., died in that city on December 8. Mr. Gregory founded his company 30 years ago and took an active part in the firm's business until 1940, when he retired. His son, Marion A., now operates the firm.

Cement Industry Expanding Rapidly

capacity increased 5 percent in 1955– 13 percent increase expected in 1956

SELDOM has anything received the widespread unfavorable publicity that has been aimed at the cement industry during the last several years because of cement shortages. The industry has been blamed almost entirely for a condition for

By WALTER E. TRAUFFER

which it was only partly responsible. In planning its expansion program the cement industry had from year to year allowed for a moderate increase in construction volume. Along with most other authorities, it underestimated the increase in the demand for cement, particularly in 1955.

Now the picture is entirely different, and the cement industry is in the middle of by far the greatest expansion program in its history. As a result even the most pessimistic agree that the industry should come very close to meeting even a further increase in demand during 1956 and that in 1957 capacity should exceed demand for the first time in recent years.

No one as yet seems to know just why the cement industry, in such a short time, changed its attitude and decided to embark on such an unprecedented expansion program. Many producers attribute it to the growing conviction that our economy is no longer in a boom period but has reached a new and higher plane from which comparatively little deviation is expected within the next few years—at least not downward. Others feel that construction volume will be at record levels for some years, regardless of business conditions in general. A few seem to feel that such expansion is not justified by long-term future prospects but are going along in order to meet competition.

Opinions outside the industry are varied and sometimes uncomplimentary. It is certain that the surge of imports caused by the severe shortages in 1955 had something to do with this expansion activity. No statistics are yet available, but imports last year may have set a new record, at least for the post-war period. These imports reached not only all coastal areas, but also the Great Lakes area, and in many cases went far inland. An instance—possibly one of many—was the use of German cement in the construction of an $8,000,000 grain elevator in a Southwestern state, 400 miles in from a port on the Gulf of Mexico and much closer than that to several cement plants. The interest being shown by foreign cement producers and other foreign capital in the establishment of plants in Canada and the United States also may have helped.

There is no doubt that the competition of other materials also entered into the picture—including materials which partially or completely replace cement. There is an alarming trend toward the use of aluminum, glass, porcelain-coated steel, etc., in some types of building construction. A serious threat to the cement producer, but not to the user, is the growing trend toward substitution of finely-ground pozzolanic materials, fly ash, silica sand, etc., for a large part of the cement in concrete. Underlying all of this, and perhaps mostly responsible for the surge of expansion in the cement industry, is a feeling of responsibility toward customers and a desire to meet their demands if at all possible. In their efforts to help their customers and alleviate shortages, several producers are known to have imported foreign cement and resold it at little or no profit. At least one company imported foreign clinker and ground it to make more cement available.

In the January issue of PIT AND QUARRY we published a review and preview of the cement industry in which were listed all of the known major expansions going on or planned. Although we have brought this information up to date, it is still far from complete, but it does give the most accurate picture yet presented of what is going on in the cement industry. Apparently the industry in 1955 raised its capacity from 296,000,000 bbl. to about 310,000,000 bbl., or about 5 percent. The industry is known to have under way new plant and expansion programs for completion in 1956 totaling more than 62,000,000 bbl. of capacity. Some of this replaces old capacity, and some will undoubtedly carry over into 1957, but at least 40,000,000 bbl. of new capacity, for a total of 350,000,000 bbl., should be available by the end of 1956. This would be an increase of about 13 percent. Additional capacity definitely committed for 1957 completion already totals 16,000,000 bbl. over and above any carryover from 1956.

We present below a listing by states of the existing cement producing capacity and the increase expected during 1956 and later. Admittedly, information on hand is not complete, and some of the proposed additions may or may not be carried out, depending on conditions. On the other hand, many contemplated additions have not yet been announced. As capacities at the end of 1955 are not known in all cases, we are including all the information we have on 1955 additions. This information should, however, give the users of cement in all parts of the country some idea of the amount of cement that will be available in any area. In order to make this information as convenient as possible, the states are treated alphabetically so that a producer anywhere can quickly look up his own and adjoining states.

Alabama The Ideal Cement Company plans to remodel its Mobile plant and increase its capacity 300,000 bbl. to 2,500,000 bbl. by early in 1957.

The Southern Cement Company is reported to be adding 500,000 bbl. in capacity to its 1,100,000-bbl. plant at Roberta.

The Lone Star Cement Corporation is adding a new kiln, etc., at its Spocari plant, slated for completion early in 1956. This will increase capacity 500,000 bbl. annually. No change has been reported in the 1,800,000-bbl. capacity of Lone Star's plant at Birmingham.

No change has been reported in the capacities of the four other Alabama plants: Alpha Portland Cement Company, Birmingham (1,700,000 bbl.); the Lehigh Portland Cement Company, Birmingham; the National Cement Company, Ragland (1,750,000 bbl.); the Universal-Atlas Cement Company, Leeds. At the end of 1956 cement plants in Alabama

are expected to have a combined capacity of 13,900,000 bbl. annually.

Arizona The only producing cement plant in Arizona, that of the Arizona Portland Cement Company at Rillito, added a third kiln and related equipment in mid-1955, which increased its capacity by 1,100,000 bbl. to 2,500,000 bbl. annually.

There is a rumor that the proposed new 2,500 bbl. per day plant at Clarkdale may be built, but this facility could not be completed before 1957.

Arkansas The only producing plant in Arkansas, that of the Ideal Cement Company at Okay, is getting a new kiln and related equipment which will increase its capacity 1,250,000 bbl. to 2,600,000 bbl. by late 1956.

There is a possibility that Arkansas may get a new cement plant but not before 1957. A group of Texas businessmen is reported to be planning a 900,000-bbl. plant at Foreman, Ark.

California The California Portland Cement Company late in 1955 put into operation a new 2-kiln, 2,100,000-bbl. plant near Mojave. It is reported that a 2,500,000-bbl. addition may be undertaken for completion in 1957. No change is reported in the 5,000,000-bbl. capacity of California's plant at Colton.

The Permanente Cement Company's new 2,000,000-bbl. plant near Lucerne Valley is scheduled to be in operation late in 1956. Another kiln and related equipment being installed at the plant at Permanente will add 1,400,000 bbl. of capacity for a total of 8,400,000 bbl. by June, 1956.

The Southwestern Portland Cement Company is reported to be adding a kiln to its Victorville plant, which will raise its capacity about 650,000 bbl. to 5,650,000 bbl. in 1956.

The Calaveras Cement Company is installing a fifth kiln at its Kentucky House plant, which will increase its capacity 1,200,000 bbl. to 4,500,000 bbl. annually by late 1956.

The Ideal Cement Company is planning to add a kiln and related equipment at the Redwood City plant. This would add 1,300,000 bbl. to the present 2,300,000-bbl. annual capacity by 1957 or later. No change is reported in the 900,000-bbl. capacity of the San Juan Bautista plant.

The Monolith Portland Cement Company at Monolith is reported to have made some expansion in 1955 and to be planning a further 1,300,000-bbl. expansion for completion late in 1956, for a total capacity of 4,800,000 bbl.

No expansion plans have been announced by the Riverside Cement Company for its plants at Crestmore and Oro Grande and capacities of these plants will presumably remain, as at the end of 1954, at 4,200,000 bbl. each.

The Santa Cruz Cement Company, with a plant at Davenport, has announced no expansion plans. Its capacity at the end of 1954 was 2,500,000 bbl.

Colorado Ideal Cement is reported to be installing equipment at its Boettcher plant which will increase its capacity 1,150,000 bbl. by late 1956, for a total of 2,350,000 bbl. No expansion has been announced for its two plants at Portland, which have a combined capacity of 2,640,000 bbl. annually.

Florida At the Lehigh Portland Cement Company's Bunnell plant a third kiln was added early in 1955, and a fourth is now being installed, for completion in 1956. Each has a capacity of 775,000 bbl., and the total capacity at the end of 1956 will be 3,100,000 bbl. annually.

No expansion has been announced for the Florida Portland Cement Company's (General) plant at Hooker's Point, which is reported to have a capacity of 4,000,000 bbl. annually.

Georgia The Marquette Cement Mfg. Company in 1955 completed the installation of a new kiln, etc., at its Rockmart plant. This replaced old equipment but added 250,000 bbl. to the capacity of the plant, for a total of 1,000,000 bbl.

No change has been reported in the 1,150,000-bbl. capacity of Penn-Dixie Cement Corporation's plant at Clinchfield.

Idaho No expansion plans have been announced for the Inkom plant of the Idaho Portland Cement Company, which is rated at 600,000 bbl. annually.

Illinois The Medusa Portland Cement Company has under way at its Dixon plant a program which will add 1,000,000 bbl. to its capacity by the end of 1956, for a total of 3,500,000 bbl.

Alpha Portland Cement is reported to be contemplating a 500,000-bbl. expansion of its 1,600,000-bbl. LaSalle plant, slated for completion in 1959.

No expansion plans have been announced for the plants of the Lehigh Portland Cement Company and the Marquette at Oglesby. Their rated capacities are 1,120,000 bbl. and 4,250,000 bbl. respectively.

Indiana Universal Atlas Cement Company is building a new 3,000,000-bbl. plant at Buffington, scheduled for completion late in 1956. This will increase capacity at that location to 10,000,000 bbl. annually.

At the Greencastle plant of Lone Star Cement Corporation a kiln installation early in 1955 increased capacity 600,000 bbl. to a total of 2,600,000 bbl. annually.

No change was reported by the Louisville Cement Company for its Speed plant, which has a rated capacity of 2,500,000 bbl., or by Lehigh Portland Cement for its 1,700,000-bbl. plant at Mitchell.

Iowa Penn-Dixie Cement is installing a new kiln, etc., at its West Des Moines plant, which is to begin operations in August, 1956. Capacity will be increased 1,000,000 bbl. to 2,340,000 bbl. annually.

The Northwestern States Portland Cement Company, Mason City, is reported to be completing the installation of three new kilns, etc., to replace six old ones. Capacity is said to have been increased 500,000 bbl. in 1954-55, and 300,000 bbl. more is expected in 1956, for an estimated total of about 2,800,000 bbl. annually.

Marquette Cement plans a 1-kiln 450,000-bbl. expansion of its Des Moines plant by mid-1956, for a total capacity of 2,420,000 bbl. annually.

Lehigh Portland Cement recently announced plans for the completion, probably by early 1957, of a 1,000,000-bbl. expansion to its plant at Mason City, for a total of 3,000,000 bbl. annually.

Dewey Portland Cement, Davenport, has announced no expansion plans. Improvements made in 1955 added 400,000 bbl. to its rated capacity, which is now 2,750,000 bbl. annually.

Kansas Lone Star early in 1955 completed a 600,000-bbl. expansion of its Bonner Springs plant, for a total of 2,100,000 bbl.

The Monarch Cement Company made some improvements in 1955 to its plant at Humboldt, but these are not known to have affected its capacity of 1,500,000 bbl. annually.

The Ash Grove Portland Cement Company is reported to have near completion a 1-kiln addition to its Chanute plant, which will not add

to its present 2,100,000- bbl. capacity.

The Consolidated Cement Corporation, Fredonia, is reported to have made a 1-kiln, 1,300,000-bbl. addition late in 1955, for a total capacity of 2,300,000 bbl.

No change in capacity was announced for the plant of the Universal Atlas Cement Company at Independence, or for Lehigh Portland at Iola. The six plants in Kansas are expected to have a combined capacity of 11,500,000 bbl. by the end of 1956.

Kentucky The Kosmos Portland Cement Company, Kosmosdale, completed the installation of one new kiln in 1955 and expects to have another one in operation in 1956. Each kiln is adding about 600,000 bbl. to the capacity of the plant, for a total of about 2,600,000 bbl. annually.

Louisiana Lone Star is building a new 2-kiln, 2,000,000-bbl. plant near Lake Charles, scheduled for completion late in 1956. No change has been announced for its 2,200,000-bbl. plant at New Orleans.

Ideal Cement has announced plans for a 1-kiln, 620,000-bbl. addition to its plant at Baton Rouge, for a total of 2,770,000 bbl. early in 1956.

Maine No change was reported in the capacity of the Dragon Portland Cement Company, Thomaston, which remains at 2,000,000 bbl. annually.

Maryland Lehigh Portland Cement in 1956 expects to complete a 3-kiln expansion of its plant at Union Bridge. This will be essentially a new plant and will increase capacity at that location 2,000,000 bbl. to over 3,000,000 bbl. annually.

The North American Cement Corporation is doing work at its Security plant which will increase its capacity somewhat in 1956. Its rated capacity is now 1,800,000 bbl. annually.

Michigan The Peerless Cement Corporation has under construction at Detroit a new 1-kiln, 1,000,000-bbl. plant which will be in operation in mid-1956. No expansion is announced for its older Detroit plant or the one at Port Huron, which are rated at 1,750,000 bbl. and 2,000,000 bbl., respectively.

The Alpena plant of Huron Portland Cement Company continues to grow rapidly. Capacity was increased 1,000,000 bbl. in 1955, and two new kilns, etc., now being added will increase capacity 3,000,000 bbl. by mid-1956, for a total of 12,000,000 bbl. annually.

The Penn-Dixie plant at Petoskey has just completed a 1-kiln, 1,000,000-bbl. expansion of the former Petoskey Cement Company, for a total of 2,600,000 bbl. annually.

The Aetna Portland Cement Company, Bay City, will complete its 1-kiln, 1,000,000-bbl. addition early in 1956, for a total capacity of 3,000,000 bbl. annually.

The Wyandotte Chemicals Corporation, Wyandotte, recently announced an expansion program which will double its present 1,200,000-bbl. capacity late in 1956.

The Consolidated Cement Corporation has announced no changes for its Cement City plant, which is rated at 2,200,000 bbl. annually.

Minnesota Universal-Atlas reports no change in the capacity of its 2,000,000-bbl. plant at Duluth.

Mississippi Marquette has announced no expansion plans for its Brandon, Miss., plant, which is rated at 1,220,000 bbl. annually.

Missouri Marquette also announced recently that it will build a 1-kiln, 1,250,000-bbl. plant alongside its present operation at Cape Girardeau. When completed late in 1956, this facility will increase capacity at that location to 3,000,000 bbl. annually.

The Missouri Portland Cement Company late in 1954 completed a 1-kiln, 1,200,000-bbl. plant at Sugar Creek. It was recently announced that a second kiln, etc., will be added by early 1957, to double its capacity to 2,400,000 bbl. Including the old plant, the capacity at that location will then be 3,400,000 bbl. annually. At its Prospect Hill plant Missouri added a third kiln in 1955 which increased its capacity 1,350,000 bbl. to a total of 4,800,000 bbl. annually.

Alpha Portland Cement is reported to be planning a 600,000-bbl. expansion of its plant near St. Louis, slated for completion in 1958. This plant is now rated at 1,900,000 bbl. annually.

No change has been reported in the capacity of the Universal-Atlas plant at Hannibal.

Capacity of all the Missouri plants is expected to total about 14,000,000 bbl. at the end of 1956.

Montana Ideal Cement has announced plans for a new 1-kiln, 1,300,000-bbl. plant at Trident, to be completed in 1957. No plans have been announced for its old plant at that location, which is rated at 1,200,000 bbl.

Nebraska Ideal Cement is also planning a new 1-kiln, 1,300,000-bbl. plant at Superior, to be completed in 1957. No plans have been announced for its old plant at that location, which is rated at 925,000 bbl. annually.

The Ash Grove Lime & Portland Cement Company is reported to have under way at its Louisville plant an expansion program which will increase its capacity 700,000 bbl. in 1956, for a total of 2,750,000 bbl.

New York Alpha Portland Cement early in 1955 completed a program at its Catskill plant which increased its capacity 400,000 bbl. to 1,200,000 bbl. annually.

No plans have been announced for the Jamesville plant, which is rated at 850,000 bbl. annually.

Lehigh Portland Cement is reported to have increased the capacity of its Alsen plant 1,000,000 bbl. in 1955.

Lone Star is installing a fifth kiln, etc., at its Hudson plant. When this is in operation by late 1956, capacity will be increased 1,000,000 bbl. to 3,000,000 bbl. annually.

North American Cement has under way a major conversion program at its Howes Cave plant, which when completed in mid-1956, will increase its capacity about 750,000 bbl. to about 2,250,000 bbl. annually. Further expansion is contemplated which would add 1,800,000 bbl. to its capacity by 1957 or later. No plans have been announced for North American's plant at Catskill, which is rated at 1,600,000 bbl. annually.

The Glens Falls Portland Cement Company, Glens Falls, is reported to have made a slight increase in its 1,800,000-bbl. capacity in 1955.

Lehigh Portland Cement is planning no expansion of its plant at Buffalo, which is rated at 2,000,000 bbl. annually. No expansion is reported for the Penn-Dixie plant at Buffalo.

North Carolina The Volunteer Portland Cement Company is reported to be planning a 1,200,000 bbl. plant for completion at an indefinite date.

Ohio The Consolidated Cement Corporation expects to have its new 1-kiln, 1,250,000-bbl. plant at Paulding in operation late in 1956. This quarry will also continue to supply the Cement City, Mich., plant.

Universal Atlas is installing a new kiln, etc., at its Fairborn plant, scheduled for operation early in 1956. This will increase the capac-

ity of the plant 625,000 bbl. to a total of 2,675,000 bbl.

The Standard Portland Cement Division (Diamond Alkali Company) recently announced a 320,000-bbl. increase for its Painesville plant for early 1956. The capacity of this plant will then be 1,900,000 bbl. annually.

The Diamond Portland Cement Company, Middle Branch, has an expansion program under way which will increase its capacity 1,100,000 bbl. to 2,550,000 bbl. annually by mid-1957.

Marquette Cement early in 1955 completed a program at Superior which increased its capacity 200,000 bbl. to 1,200,000 bbl. annually.

The Columbia Cement Division (Pittsburgh Plate Glass Company) has an expansion program under way at its Zanesville plant which will increase its capacity 1,000,000 bbl. to 3,000,000 bbl. annually by late 1956.

The Southwestern Portland Cement Company is reported to have completed an expansion program in 1955 at its Fairborn plant. Total capacity at the end of 1955 was 2,800,000 bbl.

Medusa Portland Cement is reported to be planning a 1,000,000-bbl. expansion of its Silica plant, scheduled for completion in 1957. This plant is now rated at 1,600,000 bbl. annually. No plans have been announced for the Bay Bridge plant, which is rated at 1,250,000 bbl. annually.

Alpha Portland Cement is said to be planning an 800,000-bbl. addition to its Ironton plant, slated for completion in 1958. Present capacity is 1,200,000 bbl. annually.

Oklahoma Ideal Cement is adding a kiln, etc., to its Ada plant, increasing capacity 1,400,000 bbl. in mid-1956 to 3,500,000 bbl. annually.

Dewey Portland Cement has announced no plans for its Ada plant, which is rated at 2,400,000 bbl. annually.

Oregon The Oregon Portland Cement Company is adding a complete new 1-kiln unit to its plant at Oswego. When completed early in 1956 this expansion will increase capacity 700,000 bbl. to 1,600,000 bbl. annually. A new kiln and related equipment has been ordered for the plant at Lime, which will add 1,000,000 bbl. to its present 500,000-bbl. capacity late in 1956.

No plans have been announced for the Ideal's plant at Gold Hill, which is rated at 650,000 bbl. annually.

Pennsylvania The Allentown Portland Cement Company early in 1955 completed the installation of a kiln, etc., at its West Conshohocken plant. Capacity was increased 1,000,000 bbl. to 2,100,000 bbl. annually. No plans have been announced for the company's Evansville plant, which is rated at 2,300,000 bbl. annually.

The Whitehall Cement Mfg. Company early in 1955 carried out major improvements to its plant at Cementon. Two new kilns, etc., to be added in 1956, should somewhat increase the present capacity of 2,200,000 bbl.

The Coplay Cement Mfg. Company at Coplay is reported to be adding 600,000 bbl. to its capacity in 1956, for a total of 2,000,000 bbl. annually.

Dragon Cement in 1955 completed the installation of a fourth 600,000-bbl. kiln, for a total capacity of 2,400,000 bbl. annually.

The Giant Portland Cement Company has reported no change in the 1,650,000-bbl. capacity of its Egypt plant.

The Hercules Cement Corporation in 1956 will complete an extensive expansion program at its Stockertown plant. The increase in capacity in 1956 will be 500,000 bbl., for a total capacity of 2,800,000 bbl. annually.

The Keystone Portland Cement Company at Bath is said to be completing the installation of a new kiln, etc., early in 1956. Capacity will be increased 650,000 bbl., for a total of 3,000,000 bbl. annually.

Lehigh Portland Cement in 1955 increased the capacity of its Fogelsville plant 100,000 bbl. annually. No plans were announced for the Ormrod and Sandts' Eddy plants.

Lone Star is installing a new kiln, etc., at its Nazareth plant, adding 900,000 bbl. to its capacity, for a total of 2,300,000 bbl. annually.

Medusa Portland Cement late in 1955 added 600,000 bbl. to the capacity of its York grey cement plant. Installation of a 750,000-bbl. kiln, etc., is now said to be under way, scheduled for completion late in 1956, for a total capacity of 1,950,000 bbl. annually. Its white portland cement plant at York is rated at 500,000 bbl. annually.

The National Portland Cement Company at Brodhead reportedly is adding 600,000 bbl. to its capacity in 1956, for a total of 2,000,000 bbl. annually.

The Nazareth Cement Company at Nazareth is reported to be adding 600,000 bbl. to its capacity in 1956, for a total of 2,200,000 bbl. annually.

Penn-Dixie, with plants at Bath, Nazareth, Penn-Allen, and West Winfield, has announced no changes in rated capacities. No change has been reported for the 2,500,000-bbl. plant of Alpha Portland Cement at Martins Creek.

The Bessemer Limestone & Cement Company is installing a kiln, etc., at its Walford Station plant which will add 1,300,000 bbl. to its capacity by mid-1956, for a total of 3,100,000 bbl.

The Green Bag Cement Division of Pittsburgh Coke & Chemical Company is increasing the capacity of its Neville Island plant 400,000 bbl. early in 1956, for a total of 2,200,000 bbl. annually.

Universal-Atlas late in 1955 completed the reconstruction of its Universal plant into an essentially new plant but reported no increase in its capacity. No change has been reported in the capacity of the Northampton plant.

No change has been reported in the 1,600,000-bbl. capacity of the Medusa plant at Wampum.

South Carolina The Carolina-Giant Cement Company is installing a kiln, etc., at Harleyville, which will increase its capacity 1,200,000 bbl. in 1956 to 3,000,000 bbl. annually.

South Dakota The South Dakota State Cement Plant at Rapid City is said to have nearly completed the installation of a new kiln, etc., which will increase its capacity 900,000 bbl., for a total of 2,250,000 bbl. annually.

Tennessee General Portland Cement is installing a kiln, etc., at its North Chattanooga plant which will add 500,000 bbl. to its capacity in 1956.

No changes have been announced in the capacities of the other five plants in Tennessee. Marquette's plants at Nashville and Cowan (rated at 990,000 bbl. and 1,020,000 bbl., respectively); those of Penn-Dixie at Kingsport and Richard City; and that of the Volunteer Portland Cement Company at Knoxville (rated at 2,000,000 bbl. annually).

The six plants in Tennessee are expected to have a combined capacity of 8,600,000 bbl. at the end of 1956.

Texas The General Portland Cement Company (Trinity Division) is reported to have completed a 1,250,000-bbl. addition to its Houston plant in 1955. A new kiln, etc., is being installed in its

(Continued on page 186)

World's Largest Block Plant.

Strangely, Colossus of Industry is Located in Sparsely Settled West Instead of Metropolitan East . . .

"Mighty oaks from little acorns grow". This familiar adage can certainly be applied when relating the story of the Superlite Builder's Supply Company, Phoenix, Arizona. This progressive block plant was founded about 11 years ago, on the proverbial "shoestring" (cash assets of about $3500.) Today, this company operates, under one roof, the largest block plant in the world. And the fact that the plant is located in "The Valley of the Sun" (Phoenix, Arizona) instead of in a more thickly populated area, makes the success of the company all the more remarkable.

• • •

The seven Besser Vibrapacs, shown in the picture at left, are playing an important role in this extraordinary success story. All seven machines operate continuously, 24 hours of the day, with practically no downtime. Each machine receives the mixed concrete from a Besser 50 cu. ft. Mixer, and a travelling weigh batcher delivers aggregate and cement to each Besser Mixer. For aggregate, a blend of volcanic scoria is used. Materials come from company-owned and operated deposits. Eleven carloads are unloaded and processed each day.

P. M. "Coach" Thomas, General Manager of Superlite and one of the founders of the Company.

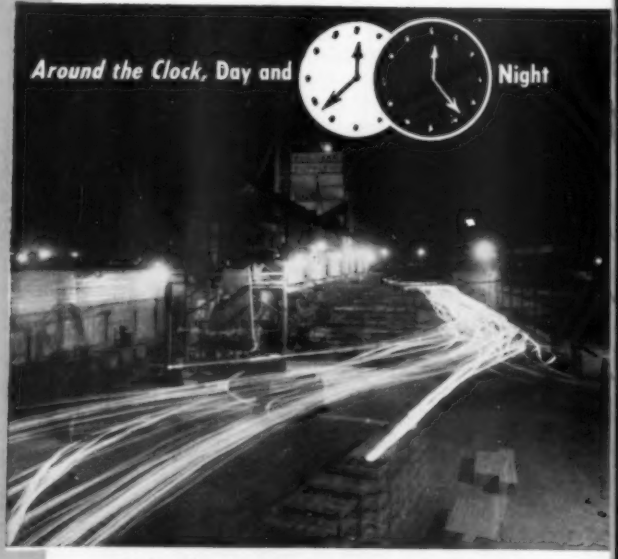
MRS. FRAN SMITH,
Advertising Director

M. E. WAGONER,
Sales Manager

ROBERT MIZER,
General Plant Superintendent

P. M. "Coach" Thomas says:

"After the first month's operation with a Besser Vibrapac, we have never showed a loss. This is something we couldn't say when we operated other machinery, as month after month we showed so much downtime that we were always operating in the red. By having the entire cooperation and teamwork offered by the Besser Company, we have been able to prosper and progress in a fashion that we do not think possible with any other equipment or company."



The Superlite plant operates 24 hours a day, with a daily production of 140,000 units. The interesting picture, above, is the result of a time exposure, taken at night. It shows the path of the lift trucks moving green block to the twenty two high temperature steam curing kilns. A 12 hour steam curing cycle is used.

BESSER COMPANY

is Another BESSER Booster*

* This is the 127th of a series of ads featuring leaders of the Concrete Products industry who are stepping up block production with Besser Vibrapac machines.

75% of ALL Phoenix Construction is Built with Superlite Block!

Phoenix, Arizona is one of the fastest growing cities in the United States, and the Superlite Builder's Supply Company certainly has reason to be proud of the part its product SUPERLITE Block has played in the city's progress. About 75% of all construction is of Superlite masonry units. Wherever you look, you find new homes, commercial structures, schools and churches built with concrete masonry units produced on Superlite's Vibrapac machines. Most of these buildings are designed by architects. All combine beauty with permanence, plus architectural flexibility.

A typical Phoenix home built with 8" x 4" x 16" Superlite Block produced on Vibrapac machines. Note the charm and beauty of this all-masonry home, built for permanence.

Meet "SUPERLITE SAM", the company's clever trade character. He says: "I am the most economical building material you can buy, and I just refuse to wear out. Termites cannot ruin me. I defy the sun or the cold to penetrate me. And, with all modesty, I must tell you, everyone says I have great beauty."

Steel hopper bottom cars at R. R. siding. Materials are conveyed from pit to crushing and screening plant, then to storage bins.

High Quality Block, *plus Progressive Sales Policies,* Assure Success!

The Superlite Company is not only interested in attaining mass production records; the firm insists that each manufactured unit be of a high quality block, capable of meeting the highest standards of the industry. Good salesmanship, production planning and plant economies have also helped the company to achieve success. Of course, the little trade figure, shown above, plays an important role in selling more than 45,000,000 units annually (8" or equivalent) to people in the Phoenix area.

Aerial view of the 7 Vibrapac machine plant of the Superlite Builder's Supply Company at Phoenix, Arizona. Note extensive yard storage facilities. Block are stored for a minimum of thirty days. Superlite also operates a Vibrapac block plant in Calipatria, California.

BESSER COMPANY, Box 131, Alpena, Mich., U.S.A.

1ST in Concrete Block Machines

BESSER VIBRAPAC

A 8551-2PBC

Winners of Second N. C. M. A. Safety Contest Announced

NINETY-ONE concrete block plants competed in the second annual N.C.M.A. Safety Contest for the 12-month period ending July 31, 1955. This is an increase of 20 percent over the previous year's participation and indicates the industry's growing interest in accident prevention.

A total of 39 plants completed the contest year without a single lost-time accident, and 14 of these have operated two consecutive years without a lost-time injury. Certificates of Achievement in Safety will be presented to these plants at the coming annual convention in New Orleans, La., on January 25. Henry Quaritius, Nailable Cinder Block Corporation, Brooklyn, N. Y., will make the presentation.

The three safety award winners, each of whom will receive the Association's beautiful bronze trophy, are as follows:

Class A Award (plants having annual production in excess of 5,000,000 8- by 8- by 16-in. equivalents)—the Geist Builders Supply Company, Cleveland, Ohio.

Class B Award (plants with an annual production between 1,500,000 and 5,000,000 8- by 8- by 16-in. equivalents)—Palmetto Quarries Co., Columbia, S. C.

Class C Award (plants having annual production less than 1,500,000 8- by 8- by 16-in. equivalents)—Fischer Lime & Cement Company, Memphis, Tenn.

Companies having an accident-free record during the contest period are listed below. The 14 plants of this group that operated two consecutive years without a single lost-time accident are designated with an asterisk.

Aberdeen Block Co., Aberdeen, S.D.
*Adams Concrete Products Co., Ypsilanti, Mich.
Alaska Concrete Products Co., Fairbanks, Alaska
*Alwine Brick Co., New Oxford, Pa.
Auburn Cement Products Co., Inc., Auburn, N. Y.
Capital Concrete Products Co., Topeka, Kans.
Christensen Concrete Products, Grand Island, Nebr.
Concrete Products Co., Sioux City, Iowa
Concrete Supply Co., Inc., Evansville, Ind.
*Felicetti Concrete Products, Niagara Falls, N. Y.
Fergus Concrete Products Co., Fergus Falls, Minn.
Franklin Concrete Products Corp., Franklin, Va.
Fred Johnson Cement Block Co., Duluth, Minn.
*Hay-Con Tile Co., Detroit, Mich.
Illinois Brick Co., Franklin Park, Ill.
*Jackson Ready-Mix Concrete, Jackson, Miss.
*John Haeusser Concrete Products, Inc., Buffalo, N. Y.
Katterjohn Concrete Products, Paducah, Ky.
Kentucky Concrete Products, Inc., Newport, Ky.
*Maples Concrete Block Co., Cohutta, Ga.
Maramonte & Sons, Milwaukee, Wis.
*Mitchell Concrete Products, Inc., Mahomet, Ill.
*M. J. Grove Lime Co., Frederick, Md.
N.C. Products Corp., Raleigh, N.C.
*Northwest Concrete Products Co., St. Cloud, Minn.
*O. G. Hanson & Son, Princeton, Minn.
Patterson Supply Co., Monongahela, Pa.
*Paul Riefler, Inc., Hamburg, N. Y.
Rhode Island Cinder Block Co., Inc., North Providence, R. I.
Ruby Lumber Co., Madisonville, Ky.
Standard Block Co., Gulfport, Miss.
Stewart-Nattinger, Inc., Springfield, Mo.
*Southern Tier Concrete Products Co., Alfred, N. Y.
The Concrete Products Co. of Cape Cod, Inc., Falmouth, Mass.
*Western Concrete Products, Inc., Bismarck, N. D.
Zeidler Concrete Products Machinery Co., Clear Lake, Iowa.

The Geist Builders Supply Company literally walked off with the Class A Award this year by being the only company in its category submitting a perfect accident-free entry. This is no reflection on the records of the other Class A participants, because 12 months of accident-free operation in a plant producing over 5,000,000 block is no easy task. It is, however, quite an accomplishment on the part of the Geist Company, and much of the credit for it goes to R. E. Scheer, superintendent.

When Mr. Scheer began his present association with the Geist or-

Left: Class B Award, presented to the Palmetto Quarries Company, Columbia, S.C.

National Concrete Masonry Association
Certificate of Achievement
Awarded to the employees of
Selma Concrete Products Company
for operation without a loss time accident
for period ending
July 31, 1954

Right: Certificate of Achievement, one of 14 awarded to companies having accident-free records during the last contest period.

better concrete faster and cheaper with COLUMBIA CALCIUM CHLORIDE

Making a Calcium Chloride solution at ready mix plant for automatic dispensing

Precast concrete pipe made with Calcium Chloride is ready for quick shipment

IN READY MIX

Ready mix producers can render a genuine service to customers by recommending the use of Columbia Calcium Chloride—especially at temperatures below 70°F. when the set and strength of plain concrete are greatly retarded.

You can add Columbia Calcium Chloride to the mix either at your plant, or on the job. Columbia Calcium Chloride is easily controlled in either flake or liquid form. Here's what it does for your customers:

- Makes initial and final set three times faster
- Increases workability
- Increases early and ultimate strength
- Releases forms faster for re-use
- Cuts down on overtime
- Helps meet work schedules

Start now! Recommend the addition of Columbia Calcium Chloride to your ready mix customers.

IN CONCRETE PRODUCTS

Whether your concrete products are blocks, pipe, precast or prestressed units, the use of Columbia Calcium Chloride will improve production and lower manufacturing costs. Here are some of the advantages:

- Reduces time required for initial set
- Gives higher early strength
- Reduces curing time
- Reduces cracking
- Allows for quicker handling
- Reduces breakage
- Permits earlier shipping

These advantages are especially important during cold weather. Calcium Chloride is not an anti-freeze, but the time required for protection in freezing temperatures is shortened, often as much as 50 percent. Columbia Calcium Chloride works equally well with normal, air-entrained and early high strength cements.

WRITE TODAY FOR COMPLETE INFORMATION . . . PLEASE SPECIFY WHETHER YOUR INTEREST IS IN READY MIX OR CONCRETE PRODUCTS

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
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DISTRICT OFFICES: Cincinnati · Charlotte · Chicago · Cleveland · Boston New York · St. Louis · Minneapolis New Orleans · Dallas · Houston · Pittsburgh · Philadelphia · San Francisco
IN CANADA: Standard Chemical Limited and its Commercial Chemicals Division

PRODUCTION RATES FOR 91 BLOCK PLANTS
12-Month Period Ending July 31, 1955

Annual Prod. Index* Equiv.	0-1 Million		1-2 Million		2-4 Million		4-6 Million		Above 6 Million	
	Man Hr. per 1,000 Block	Block per Man Hr.	Man Hr. per 1,000 Block	Block per Man Hr.	Man Hr. per 1,000 Block	Block per Man Hr.	Man Hr. per 1,000 Block	Block per Man Hr.	Man Hr. per 1,000 Block	Block per Man Hr.
	25	40	15	65	19	53	13	76	16	63
	31	32	36	28	21	48	17	58	30	31
	35	29	62	16	16	61	17	60	40	25
	33	30	12	81	8	120	6	170	23	43
	12	82	43	23	21	47	25	40	15	66
	20	49	32	31	22	45	10	100	18	57
	20	51	15	66	16	61	14	69	19	53
	23	44	17	58	14	74	19	53	13	76
	16	64	25	40	15	68	11	89	9	111
	17	58	16	62	9	115	15	66	11	90
	42	24	11	90	29	34	20	49		
	40	25	20	50	21	47				
	16	61	16	63	20	50				
	20	51	15	67	10	100				
	16	57	23	43	14	72				
	33	30	20	50						
	28	39	32	31						
	43	23	15	66						
	30	33	19	54						
	27	37	14	74						
	14	69	29	35						
	36	28	29	35						
	29	34	26	42						
			30	39						
			13	80						
			22	45						
			14	72						
			11	88						
			16	62						
			15	66						
			17	59						
			14	71						
Average	26	43	68	55	17	67	15	77	18	63

Individual production rates of the 91 competing plants.

ganization less than two years ago, the plant's safety record was not one to which the firm could point with pride. In fact, the record was such that management was becoming alarmed. Mr. Scheer was given full management backing and immediately began to establish an accident prevention program. A Plant Safety Committee was formed consisting of the plant superintendent (Mr. Scheer), the maintenance foreman, the production foreman, one maintenance employee, and two production employees.

This committee meets once a month to discuss safety practices and accident prevention problems. An inspection tour of the entire plant follows each meeting. In addition, every third Friday a general safety meeting is held, at which guest speakers or accident prevention movies are presented. The Geist Company has stressed the employee's loss in an accident as may be evidenced by their slogan, "Accidents that you prevent keep you able to work."

A great deal of credit for the Palmetto Quarries Company's safety record, in their two plants at Columbia, S. C., goes to Superintendent M. K. Corley. The Palmetto plants are located in a state where coverage under the State Workmen's Compensation Act is on an elective basis. Until two and one-half years ago this company had chosen not to come under the Compensation Act. Operating outside the Compensation Act, the cost of accidents kept mounting as the company's operation grew, until they voluntarily placed themselves within the act and associated themselves with a local insuring and safety agency. The reduction in accidents and resulting costs during the last two years has been outstanding. Although no exact figures on costs are immediately available, a spokesman for the company estimated the insurance cost of today at one-fourth the cost of accidents before the safety program.

At present the safety program is guided by the local agency's safety engineer, who visits the plant once each month to inspect facilities and hold a safety meeting with the safety committee, consisting of the plant superintendent and foremen. This monthly visit is followed by a written report on existing conditions and suggestions for improvement to management. To Mr. Corley and his committee falls the task of hazard correction, and teaching and maintaining safety. The success of their efforts is apparent in the excellent accident-free record they have established.

For the second consecutive year the Concrete Products Division of the Fischer Lime & Cement Company won the Class C Safety Award. This unusually fine safety record can be mainly attributed to the efforts of W. A. Carter Sr., manager of the Concrete Products Division.

Accident prevention is no accident

R. E. Scheer, plant superintendent, The Geist Builders Supply Company.

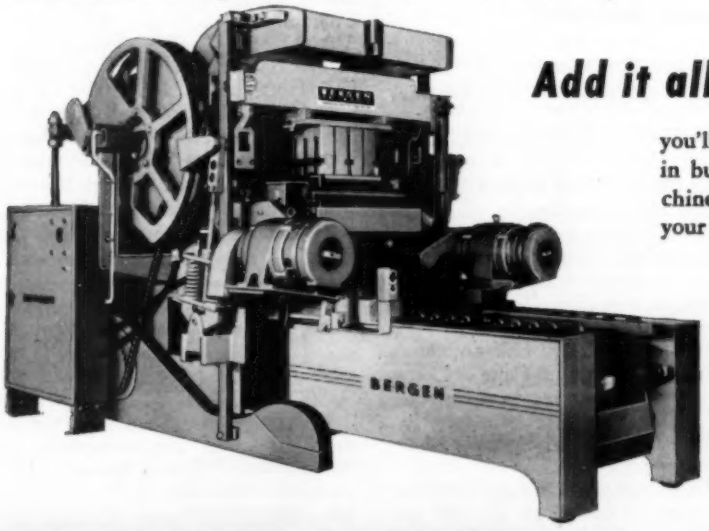
W. A. Carter Sr., manager, Concrete Products Corporation, Fischer Lime & Cement.

M. K. Corley, plant superintendent of the Palmetto Quarries Company.

it all adds up . . .

with BERGEN'S "know-how"

How do you build a better block . . . increase production . . . ? Block plant operators, everywhere, agree these are essential to successful, profit-making operations. The BERGEN TRI-MATIC is engineered to build . . . more . . . better block. It's super-powered to increase your production up to 6 mold cycles per minute . . . an average production of 10,000 — 8″ equivalent units per 10 hour day.



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Write or phone "Collect" for details on BERGEN'S answer to your block plant problems.

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Phone: NUTLEY (N.J.) 2-7300

with the Fischer company. This company obtained the full time services of a safety engineer a number of years ago. Their present safety program includes the following: a medical examination at time of employment; safety rules; weekly safety meetings with the employees; and a monthly meeting of management, safety engineer, and all supervisory personnel.

Accident prevention is a full-time job at the Fischer Concrete Product Plant. This has been doubly hard to accomplish during the last two years because of a complete rebuilding and modernization program that has been under way. The added hazard of this program has caused Mr. Carter to carry a small whistle in his pocket. He may use it to call attention to some unsafe act or equipment at any time. During this period it has not been unusual for Mr. Carter to stop at some location during a plant inspection tour, and pull out his whistle to call for an on-the-spot safety meeting with some employee or group of employes. Taking the time to explain to each worker the "why" of accident prevention has paid big dividends. The Fischer Company has won national recognition for safety on several occasions, including a letter from the Vice-President of the United States.

The individual production rates of the 91 participating plants represented in this year's contest are given in the accompanying table. For the reader's convenience the production rate is given both as man hours per 1000 8- by 8- by 16-in. equivalents and the number of units per man hour. Although rather wide variations exist among the plants of any particular size grouping, there is a trend toward more efficient operation with the larger plants, as indicated by the averages. A wide variation among plants is to be expected in a survey of this sort since production of concrete brick and other low output items are considered 8-in. equivalents.

In general, the production per man-hour has advanced considerably over the rate indicated by last year's contest. In 1953-54 (77 plants competing) it required 24 man-hours to produce 1,000 8-in. equivalents; and only 41 8-in. equivalents were produced per man-hour. In 1954-55 (91 plants competing) it required only 18 man-hours to produce 1,000 8-in. equivalents; and 56 8-in. equivalents were produced per man-hour.

No attempt has been made to correlate plant production rate with geographic location, accident frequency rate, or other factors which doubtless have an influence on them. The rates are tabulated here so that any plant can compare their own production rate with the average for other plants in any size category.

Radio and Ready Mix

(*From page* 172)

the manufacturer of that radio unit to furnish steady and competent maintenance. He realizes that the modern two-way industrial radio is an instrument which calls for expert attention at all times to keep it functioning properly.

Material Service is using radio tuned to the 450-470 megacycle band (U.H.F.) mainly to avoid sun spot interference, which affects radio in the older 25-30 megacycle band. This interference will steadily increase over the next several years, according to the Federal Communications Commission, which has for some time been aware of the necessity of providing aditional space in band frequencies, to take care of the growth of industrial radio. Present recommendations are to use the upper-frequencies band to avoid this crowding, as well as to eliminate the possibility of sun spot interference. Fleet operators who have their sets tuned for these lower frequencies can have them adjusted by equipment suppliers to the higher bands mentioned.

Cement Industry

(*From page* 179)

Dallas and Fort Worth plants, which will increase capacity 1,250,000 bbl. at each.

The Halliburton Portland Cement Co. at Corpus Christi reports no change in its rated capacity of 1,400,000 bbl. annually.

Ideal Cement is building a new 1,525,000-bbl. plant near its present one at Houston, slated for completion in mid-1956. This will give the company a total capacity at that location of 2,775,000 bbl. annually.

The Texas Portland Cement Company is building a new plant at Orange which will have a capacity of 500,000 bbl. when completed late in 1956.

The Longhorn Portland Cement Company at Longhorn in 1955 installed a new kiln, etc., which increased its capacity 700,000 bbl. to 2,500,000 bbl. annually.

Lone Star is installing two new kilns, etc., at its Dallas plant which will increase its capacity by 1,400,000 bbl. late in 1956 to 3,700,000 bbl. annually. A third kiln, etc., at the Houston plant will increase its capacity 1,100,000 bbl. late in 1956 to 3,200,000 bbl. annually. No changes have been announced for the Maryneal plant, which is rated at 2,500,000 bbl. annually.

No change was reported in the capacity of the San Antonio Portland Cement Company at Cementville, which is rated at 2,000,000 bbl. annually, or in that of Universal-Atlas at Waco.

The Southwestern Portland Cement Company at El Paso is reported to be increasing the capacity of its plant 300,000 bbl. in 1956, for a total of 1,800,000 bbl. annually.

Utah No expansion plans have been reported for either of the two plants in Utah—that of Ideal Cement at Devil's Slide, and the Portland Cement Company of Utah rated at 2,200,000 bbl. and 350,000 bbl. annually, respectively.

Virginia Lone Star is reported to have near completion at its Cloverdale plant the installation of a new kiln, etc., which will add 800,000 bbl. to its capacity, for a total of 3,000,000 bbl. annually. No change is reported in the 1,200,000-bbl. capacity of its South Norfolk plant.

Lehigh Portland Cement has reported no change in the capacity of its Fordwick plant.

Washington No changes in capacity are reported for any of the six plants in Washington. These are: Ideal Cement Co., Irwin, 650,000 bbl.; Lehigh Portland Cement Co., Metaline Falls, 1,200,000 bbl.; Northwestern Portland Cement Co., Grotto, 600,000 bbl.; Olympic Portland Cement Co., Bellingham, 900,000 bbl.; and Superior Portland Cement Co., Concrete and Seattle, 1,800,000 bbl. and 1,000,000 bbl., respectively.

West Virginia The Standard Lime & Stone Company, now owned by the American Marietta Company, has announced a 750,000-bbl. expansion of its Martinsburg plant to a capacity of 2,500,000 bbl. late in 1956.

No change has been reported in the 850,000-bbl. annual capacity of the Alpha Portland Cement Co. plant at Manheim.

Wisconsin Marquette Cement recently announced that it will build a new 1,250,000-bbl. plant at Milwaukee, to be completed late in 1956. Universal-Atlas is building a new clinker-grinding and packing plant at Milwaukee, slated for completion this year.

(*Continued on page* 194)

Only a WESTINGHOUSE has...

all these important performance features

Ready Mix operators agree. They want mixers that load fast . . . mix fast . . . discharge fast . . . at low operating and maintenance costs. That's exactly what Westinghouse Transit Mixers give you—and more!

A time-tested and proven mixer, with a new name and several new features, the new Westinghouse is available in five sizes, 4½ to 6½ cubic yards. You pick the size best suited to your operation and watch the Westinghouse go to work. Short, medium, long . . . whatever the length of haul, you are ready to pour . . . and fast . . . when you get there.

TRANSIT WESTINGHOUSE MIXER

See WESTINGHOUSE Transit Mixers at the NRMCA show at the Coliseum in Chicago, Feb. 13-16th.

Double-action mixing

Exclusively Westinghouse is the 6 auxiliary reverse mixing blade drum feature which assures faster, better and more uniform mix in less than minimum turns specified on the rating plate.

Fully enclosed gear drive

Only Westinghouse Transit Mixers have a fully enclosed gear drive for the drum . . . important because there are no exposed gears or chains to wear out, break and cause trouble. Maintenance expense is drastically reduced.

Self-aligning drum mounting

There can't be any misalignment wear and tear with the Westinghouse exclusive ball-and-socket front end mounting AT THE DRUM because it doesn't transmit truck and mixer frame flexing to driving parts.

Other plus features

2-speed transmission permitting wide range of rotating speeds at efficient engine speeds—and mixer engine mounted at front of drum away from harmful dust, bumps and excess vibration.

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LeTourneau-Westinghouse Co., Indianapolis, Indiana
Please send free illustrated booklet on
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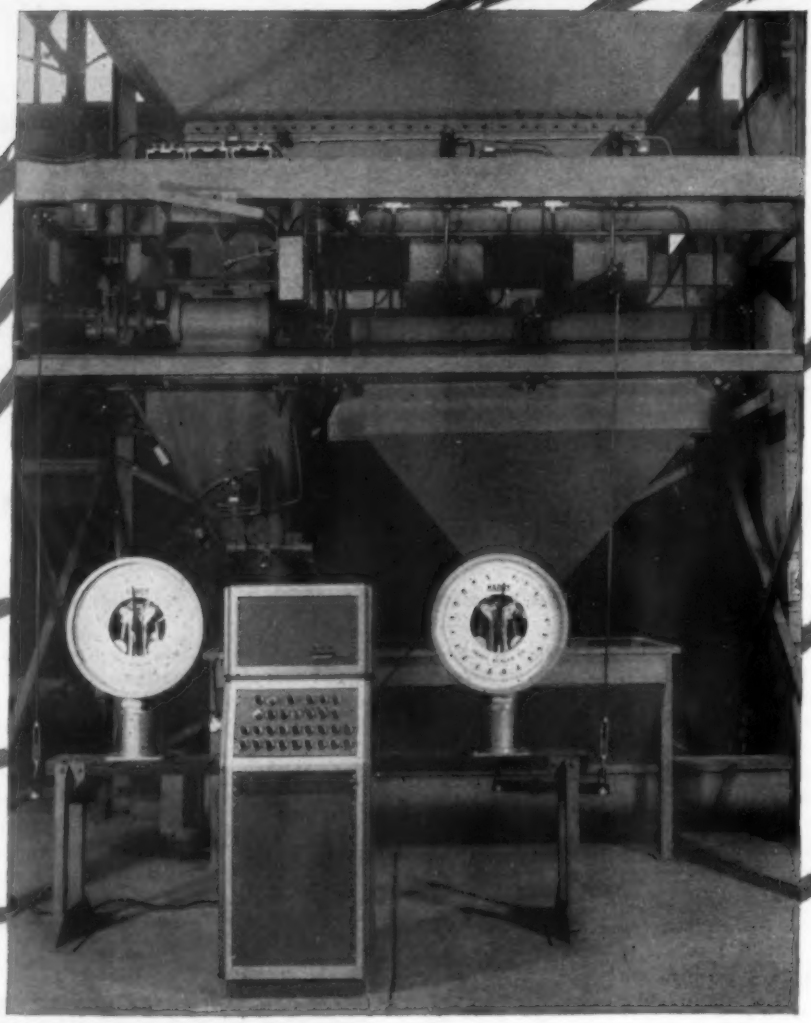


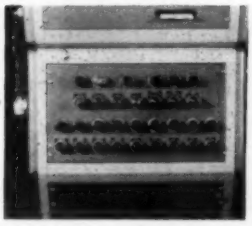
Here's the plant the industry has talked about since the word "automation" was injected into our language. A batching plant that completes all batching operations automatically with a speed and precision only possible with full electronic control. **It is the first punch card electronically operated weighing systems controlled through dial scales accepted by the Bureau of Standards.** It selects any number of materials (automatically compensating for moisture where desired) weighs them out with unparalleled speed to an accuracy that conforms exactly to mix specified and leaves a complete record of the entire process — all in less time than it takes to read this paragraph.

A roomful of electronic controls? Not on your life! That's the beauty of the new Helco-matic Batchmaster System. The entire control system has been simplified and boiled down until it is no larger than a standard filing cabinet. What's more, the design is unitized, functional parts are grouped for the quick and easy replacement. Downtime is eliminated with this system. An entire electronic "drawer" can be disconnected and replaced with a spare in a matter of seconds.

Here's the plant of tomorrow. Years ahead in design and operation, it can save you dollars every way you turn. An office girl can operate it. The cards can be used to keep a running inventory of your materials and to simplify your bookkeeping.

HELCO-MATIC BATCHING

UNLIMITED BATCH SELECTIONS



There are more than 8,000,000 batch combinations—each selected instantaneously. It has automatic and integrated moisture compensation.

AUTOMATIC INVENTORY — ACCOUNTING

Cards can be used to keep your books, simplify accounting, billing, inventory control, cost analysis, etc., with a reduced office staff.

COMPACT FILING CABINET SIZE

No electronic nightmare, but a small filing cabinet-size unit that can be placed any distance from weigh batchers.

UNITIZED FOR EASY MAINTENANCE

Electronic System is grouped and sectionalized for ease of maintenance.

LOWEST COST AUTOMATIC

With all its exclusive features, the new Helco-matic Batchmaster actually costs less than any other plant of its kind.

MEETS ALL SPECIFICATIONS

Entire system is completely interlocked meeting existing federal and state specifications.

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HELTZEL STEEL FORM AND IRON COMPANY

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Benefits of Using Calcium Chloride In Concrete Products

By WILLIAM E. DICKINSON
Chief Engineer
Calcium Chloride Institute

THE PRODUCTION of precast concrete units—block and pipe—has set new records nearly every year in the last decade. Production of concrete blocks this year is expected to reach about 2,000,000,000, and concrete pipe output is expected. to exceed 1954 total by about 5 percent, a total of 12,300,000 tons. Certainly we could not have realized our tremendous home building and public building record without the extensive use of concrete products.

Paralleling the growth in use and production of these units has been improvement in the manufacturing processes. Years ago a considerable percentage of block was produced in small plants, with hand-operated machines which turned out individual blocks.

The units were cured by wetting during storage for the minimum of seven days. With modern automatic machines, block producers turn out thousands of units daily, and the majority are low-pressure-steam cured.

Calcium chloride has long been identified as an aid in the production of concrete products. Its ability to accelerate the set of concrete, notably in cold weather make it a "natural" for the small producers who depend on the weather to a large extent for curing and gain of strength.

However, some larger producers believed that when they installed steam kilns and subjected their blocks to steam curing, the use of calcium chloride would no longer be of benefit. Our experience indicates that in the majority of cases calcium chloride can be beneficial in the production of quality concrete products, with or without steam curing.

The advantages of calcium chloride are well established where steam is not used. So let us examine a typical steam-curing cycle and determine where calcium chloride may prove helpful. This is the curing procedure generally used in the Detroit, Mich., area:

1. Two hours' holding time after closing the kiln door.
2. Raising the temperature to equilibrium—(160 deg. F. at the rate of not more than 60 deg. F. per hour).
3. Shutting off steam when the equilibrium temperature between concrete and ambient atmosphere is reached.
4. Soaking for 12 hours.
5. Exhausting steam for approximately one-half hour.

This procedure provides approximately 16 hours of curing after closing the kiln door.

Variables might be:

1. Increasing the holding time.
2. Keeping the kiln at equilibrium temperature for 3, 6, or up to 12 hours.
3. Changing the soaking time.
4. Varying the total curing time from 12 to 17 hours.

There are numerous variations in the curing cycle which will influence the strength of the block. In addition to the above factors there are, of course, the basic factors of the design of the concrete mix and the type of aggregate.

With so many variables, it is obvious that the effect of calcium chloride cannot be predicted quantitatively, as it may be for normal concrete in building construction. Here conditions are apt to be similar, and the chief variable is the weather.

In the steam-curing cycle, let us examine the first place that calcium chloride may be of value. It occurs in the holding time. If concrete units have not obtained their initial set prior to subjecting them to steam curing, they will develop cracks and be adversely affected in strength.

Therefore, the first advantage of calcium chloride is in reducing the time required for initial set. This time is normally reduced by two-thirds. This means that the holding time may be reduced. To view it another way, you are providing protection to the blocks; even those units most recently cast will have obtained initial sets and will have sufficient strength to stand the steaming operation.

The second point at which calcium chloride may prove beneficial is in a reduction of the steaming time. If it is found necessary to hold steam on for 5 hours to get suitable one-day strength, it may be possible to reduce this time by one hour or two hours by the use of calcium chloride.

The next point of savings may be in reducing the overall curing cycle by cutting down the soaking period. It might be possible to achieve an extra curing cycle in a 24- or 48-hour period.

Another very important consideration in the value of calcium chloride in steam curing is that blocks sub-

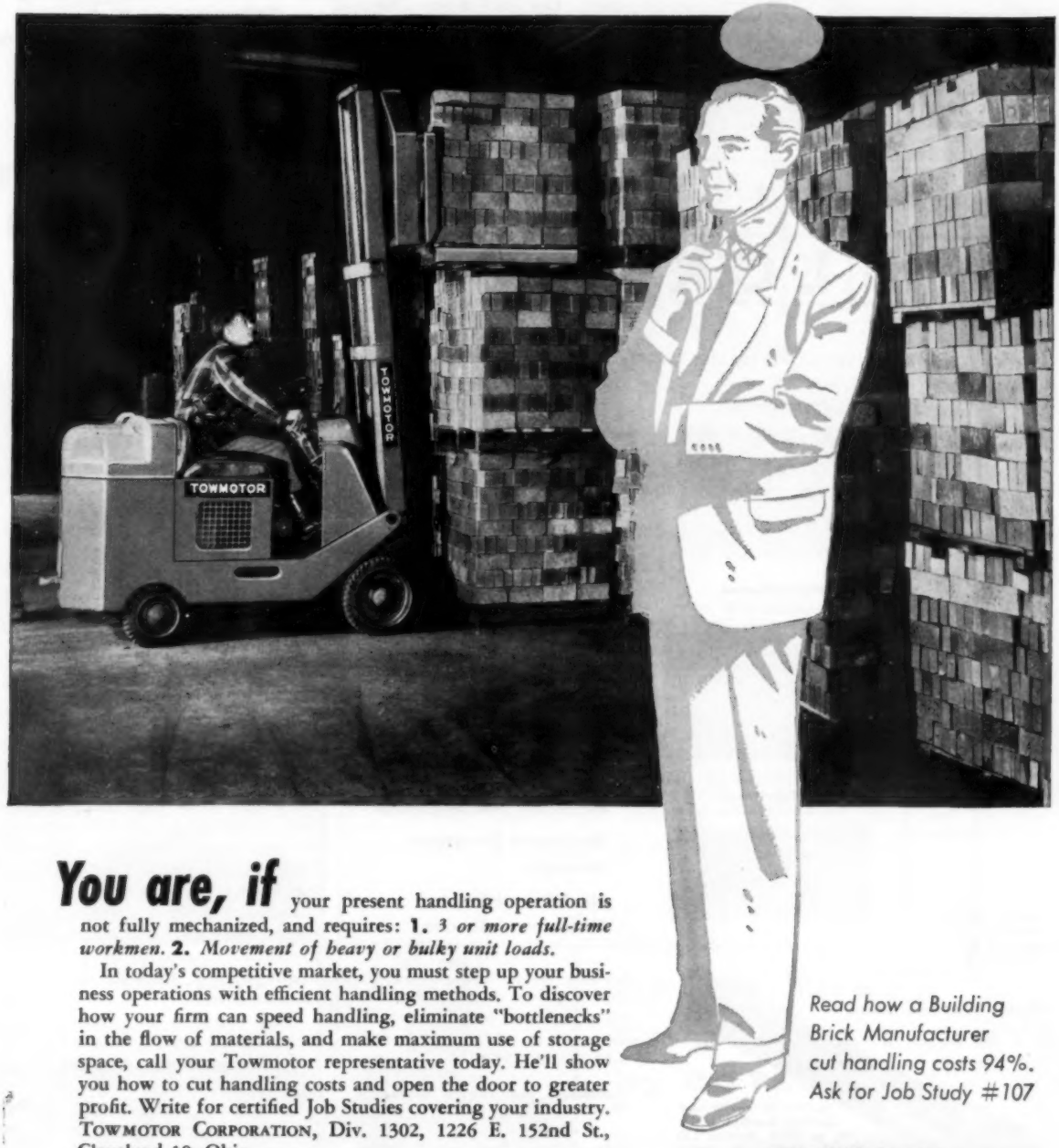
Effect of Calcium Chloride on Compressive Strength

Mix	Calcium Chloride Content (Percent of Cement)	Curing*	Compressive Strength (Percentage of Normally Cured 28-Day Strength of Relative Mix)			
			6 hr.	24 hr.	7 days	28 days
1:3 Water/cement Ratio 0.35	0	A	—	33	78	100
		B	53	69	79	95
		C	57.5	68.5	76	79
	2	A	—	52.5	97	115
		B	59.5	89	104	115
		C	66.5	87.5	90	105
1:5.5 Water/cement Ratio 0.5	0	A	—	27.5	75	100
		B	40	61	70	90
		C	32.5	47	56	67
	2	A	—	39	89	115
		B	45.5	74	90	113
		C	50	67	72	87

*A: normally cured
B: steam-cured with slow temperature rise (100 deg. C. in 6 hours)
C: steam-cured with rapid temperature rise (100 deg. C. in 2 hours)

For the 1:3 mix, at the important 24-hr. age, calcium chloride increases strength from 69 to 89 percent of standard 28-day for the slow temperature rise. For the fast rise the increase is from 68.5 to 87.5 percent. Note also that at 28 days the increase is from 95 to 115 percent for slow, and 79 to 105 percent for fast temperature rise, more than offsetting the lower strength at later ages obtained from the plain steam-cured specimens. *For the 1:5.5 mix* the results due to calcium chloride are similar. At 24 hr. with a slow temperature rise, a 21 percent increase is achieved, and with a fast rise a 42 percent increase. At 28 days the use of calcium chloride greatly makes up for lower strengths of steam-cured plain concrete.

Am I ready for a Towmotor?



You are, if your present handling operation is not fully mechanized, and requires: **1.** *3 or more full-time workmen.* **2.** *Movement of heavy or bulky unit loads.*

In today's competitive market, you must step up your business operations with efficient handling methods. To discover how your firm can speed handling, eliminate "bottlenecks" in the flow of materials, and make maximum use of storage space, call your Towmotor representative today. He'll show you how to cut handling costs and open the door to greater profit. Write for certified Job Studies covering your industry. TOWMOTOR CORPORATION, Div. 1302, 1226 E. 152nd St., Cleveland 10, Ohio.

Read how a Building Brick Manufacturer cut handling costs 94%. Ask for Job Study #107

America's ***best engineered*** *fork lift truck*

TOWMOTOR
THE ONE-MAN-GANG ®

THERE'S ONLY ONE FORK LIFT TRUCK CALLED TOWMOTOR

jected to steam curing attain lower ultimate strength than blocks moist-cured for 14 days. The generally accepted difference is that steam-cured blocks achieve only 85 percent of the ultimate strength of moist-cured blocks. Recent tests reported in Great Britain have pointed out the value of calcium chloride in offsetting this loss of strength gain.[1]

A work of particular interest was conducted by A. G. A. Saul, of the Cement and Concrete Association. He is well known in the products industry for the development of his theory on the strength of concrete as related to its "maturity" measured in time-temperature.

Mr. Saul is investigating the effects of calcium chloride on the gain of strength of concrete with an without steam curing. His work is not complete, but he gave some ofthe results available at the time. The accompanying table shows the effect of calcium chloride on compressive strength.

The figures presented relate to a 1:3 mix of ordinary portland cement, sand, and gravel with a water cement ratio of 0.35, and also to a 1:5.5 mix using the same materials with a water cement ratio of 0.5. Four-in. cubes were made with and without 2 percent of the weight of cement of calcium chloride.

Some were normally cured and some subjected to treatments of approximately 1,300 deg. C./hr. steam curing (computed from a basis of O deg. C.) with slow and rapid temperature rises. (Deg. C./hr. is the temperature of the concrete above freezing, in Centigrade, multiplied by the time exposed to such temperature.)

You will note that the extra strength gained by use of calcium chloride with steam curing did not appear too great during the first few hours. It was most marked at 24 hours.

With calcium chloride the small loss of 28-day strength of plain concrete, due to steam curing with the slow temperature rise, is practically eliminated; and the large loss, due to use o tfhe rapid temperature rise, is very much reduced. This is true to an even greater extent for the low water-cement ratio than for the high one.

Mr. Saul states: "Calcium chloride, in conjunction with steam curing, thus imparts an additional strength to concrete of all ages and enables a more rapid initial temperature rise to be used. A number of experiments with other mixes and cements, including rapid-hardening cements, (high - early - strength cement) give very similar results.

"They confirm that the calcium chloride is more effective with low water-cement ratios than with high. They also show that little, if anything, is to be gained by increasing the percentage of calcium chloride, while if this is reduced, its effects are correspondingly reduced."

Certainly every products manufacturer employing steam curing should investigate thoroughly the benefits he might achieve through the use of calcium chloride.

The variables to consider in a steam curing investigation are:

1. Cement—normal portland or high-early.
2. Calcium chloride—O percent and 2 percent with each type of cement.
3. Varying the curing cycle with each as outlined above.

From the results from such a study the products manufacturer can then select the most economical materials and curing cycle.

[1]A. G. A. Saul, Cement and Concrete Association, "Steam Curing and Its Effect Upon Mix Design," *Proceedings*, Symposium on Mix Design and Quality Control of Concrete, London, May, 1954, pp. 132-142.

Build Better Walls with Quality Guaranteed

BLOK-LOK

FLUSH-WELDED JOINTS—STRONGEST BY COMPARISON

Plain or Deformed

In Solid or Cavity Walls

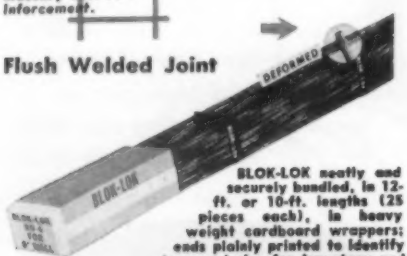
Prefabricated PARTITION-LOK at intersections

Prefabricated CORNER-LOK at corners

Prefabricated CAVITY-LOK increases wall strength

Makers of most complete line of masonry wall reinforcement.

Flush Welded Joint



BLOK-LOK neatly and securely bundled, in 12-ft. or 10-ft. lengths (25 pieces each), in heavy weight cardboard wrappers; ends plainly printed to identify type and size for inventory and order-filling convenience.

Finishes

Galvanized wire, hot-dipped galvanized and brite basic.

BLOK-LOK Standard 9 gauge steel wire

BLOK-LOK Special Standard 8 ga. deformed side rods, 10 gauge galvanized cross rods, 16" centers

BLOK-LOK Heavy 3/16" rod with 9 ga. cross member

FS-Standard 8 ga. deformed side rods by 12 ga. cross rods flush welded on 16" centers, all galvanized wire.

YOUR ASSURANCE OF

- Small Masonry Joints
- Minimum Job Breakage
- Maximum Structural Strength
- No Obstruction to Mechanical Trades

Extensive testing laboratory reports serve to confirm the sound engineering of Blok-Lok's design. Exceeds requirements of A.S.T.M. specifications A-82-34 and A-15-52T.

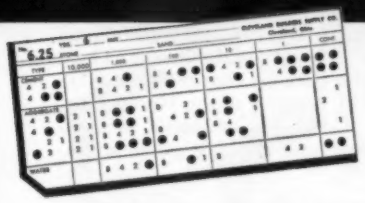
Distributors and dealers located in all major cities of U.S. and Canada.

FREE—Concrete Block Wall Calculator identifies number of blocks required. WRITE FOR YOURS TODAY

A A WIRE PRODUCTS COMPANY

7211 COTTAGE GROVE AVE., CHICAGO 19, ILL. PHONE: RADCLIFFE 3-8313

AUTOMATION ...in Ready-Mix and Block Plants



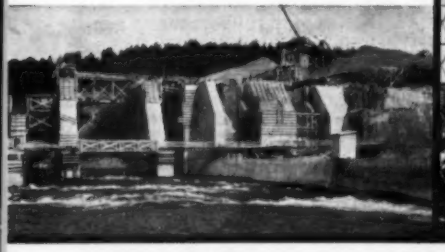
BUTLER Fully Automatic Batchers

Air view of Cleveland Builders Supply Company plant where a Butler Punched Card batching system is installed.

New Butler Electronic Control Panel. Batch selections are governed by punched cards.

A punched Card does it all . . . Takes the costly human element out of batching . . . any specified selection of 6 aggregates, 3 cements, and water — and at the "speed of light." Butler also provides other types of automatic systems that provide true accuracy, simplify paper work, assure permanent records of proportions. Can be installed on present plants as well as new plants.

(Above) Barge Mounted Butler Plant.
(Below) Pouring concrete for New Brunswick dam project.



READY-MIXED CONCRETE PLANTS by BUTLER

Meet every operating requirement in high capacity materials handling and record-breaking efficiency at low cost.

Ask your BUTLER Distributor for full details on Butler AUTOMATION in batching, and for engineered assistance in Aggregate, Bulk Cement, Ready-Mix Plant equipment and planning.

BUTLER BIN CO.
WAUKESHA, WISCONSIN

PreCaster in operation at Reading Concrete Products Inc. Reading, Ohio

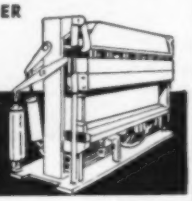
1000' of lintels daily

● Reading Concrete Products says that a few years ago they hesitated to take orders for precast items like lintels, fence posts, highway guard rail posts, etc., as their production by hand methods was very limited and their costs high.

● All this has been changed by their *PreCaster*. They now produce these items on a production basis with cost comparable to other concrete items they manufacture. They produce lintels on the *PreCaster* at a rate of 800 to 1000 feet per day . . . color and texture comparing favorably to their block.

● **THEY WRITE: "NOW YOU CAN REALIZE WHY WE CONSIDER OUR PRECASTER PURCHASE A VERY WISE INVESTMENT.**

● *Write today for PreCaster's new catalog detailing seven profit opportunities.*

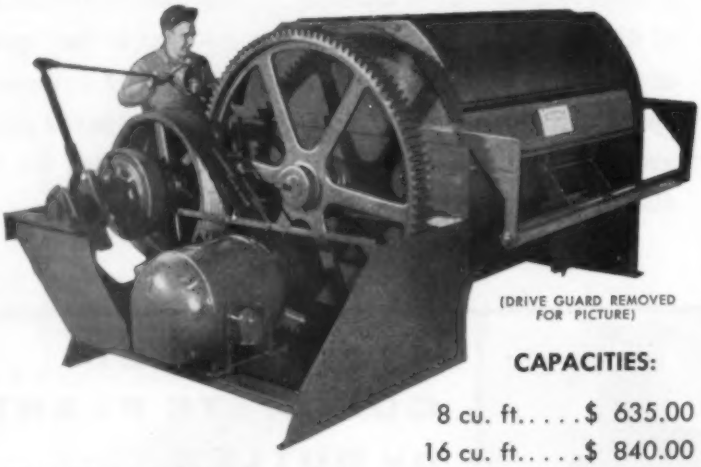


PRECASTER

5217 Beech Street • Cincinnati 17, Ohio

PRASCHAK **50 CU. FT. MIXER**

AMERICA'S POPULAR MIXER



(DRIVE GUARD REMOVED FOR PICTURE)

CAPACITIES:

8 cu. ft.	$ 635.00
16 cu. ft.	$ 840.00
21 cu. ft.	$ 945.00
30 cu. ft.	$1330.00
50 cu. ft.	$2530.00

(Compare the Mixer, not the Price)

"The Mixer that Can Take It"

Available from stock. With Motor, Motor Mount, Drive, completely assembled.

PRASCHAK MACHINE CO. MARSHFIELD, WIS.

Cement Industry

(*From page* 186)

The Manitowoc Portland Cement Company (Medusa) reports no change in the 2,000,000 bbl. capacity of its plant at Manitowoc. There has also been no change in the 900,000-bbl. capacity of the Huron Portland Cement Company's clinker-grinding and packing plant at Superior.

Wyoming The Monolith Portland Midwest Company reports no change in the 1,000,000-bbl. capacity of its plant at Laramie.

Puerto Rico The plant of the Ponce Portland Cement Company at Ponce is adding a kiln, etc., which should add 1,400,000 bbl. in 1956 to its present 2,700,000-bbl. capacity. No change has been reported in the 1,400,000-bbl. capacity of the Puerto Rico Cement Corporation's plant at Guaynabo.

Electronic Equipment Added By Cincrete Corporation

New electronic concrete block making equipment valued at $250,000 was installed recently at the Cincrete Corporation plant in Long Island City, N. Y. The new machinery manufactures blocks of various textures and was added to the Cincrete facilities to meet the demand for decorative blocks for interior and exterior finishing.

According to George Kogel, who heads the firm, plant capacity is expected to be increased by 40 percent with the additional equipment.

Concrete Block & Products Awarded Big Garage Contract

Concrete Block & Products Company has been awarded a contract for an estimated 33,000 cu. yd. of ready-mixed concrete in the construction of Detroit's new Grand Circus Park underground garage.

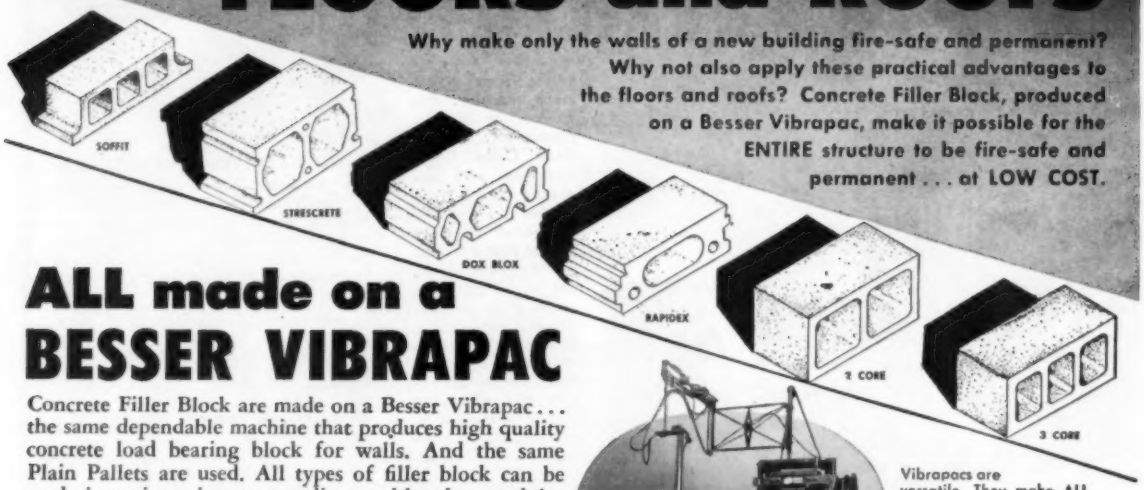
Walter A. Kurtz, general manager, places the value of the contract at approximately $500,000. Bulk cement will be supplied by the Huron Portland Cement Company.

H. K. Ferguson Company, general contractor, is building the underground garage, which will provide downtown parking facilities for 1,043 cars. Construction is expected to be completed by the end of 1957.

Dolomite aggregate and allied materials are stockpiled by Concrete Block & Products Co. on its 850-ft. Rouge River dock. The dolomite is shipped directly from Drummond Island, Mich.

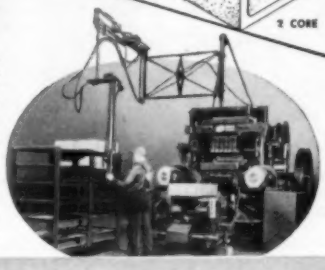
Concrete Filler Block for *Fire-Safe* FLOORS and ROOFS

Why make only the walls of a new building fire-safe and permanent? Why not also apply these practical advantages to the floors and roofs? Concrete Filler Block, produced on a Besser Vibrapac, make it possible for the ENTIRE structure to be fire-safe and permanent . . . at LOW COST.



ALL made on a BESSER VIBRAPAC

Concrete Filler Block are made on a Besser Vibrapac . . . the same dependable machine that produces high quality concrete load bearing block for walls. And the same Plain Pallets are used. All types of filler block can be made in various sizes to coordinate with other modular materials and for all load conditions. Block plant operators can materially add to their profits by supplying their customers with BOTH wall and floor units. For further facts, contact your nearby Besser representative, or write:



Vibrapacs are versatile. They make ALL types and sizes of block on ONE set of Plain Pallets. Fully automatic. Off-bearer removes finished block with power hoist. No manual lifting.

BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.

A 8585-½-H

FOR GREATER PROFITS — BUILD APPROVED CONCRETE SEPTIC TANKS with

NORWALK EQUIPMENT

Build rectangular concrete septic tanks that will meet the most rigid specifications of local health officers and sanitary engineers. Build them QUICKER and at LOWER COST with NORWALK septic tank molds.

• Molds built to your requirements •

Write for details

THE NORWALK VAULT COMPANY
Dept. CM • NORWALK, OHIO

NOW MORE THAN 150 LICENSED MANUFACTURERS *Producing*

Patented

homeward® Concrete STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

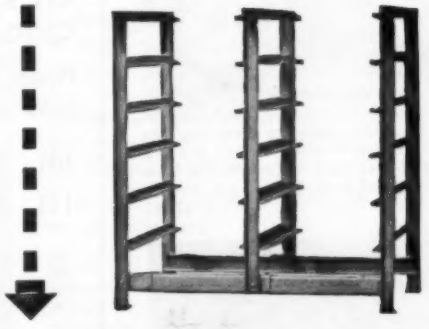
The exclusive franchise for your territory may still be open.

For Complete Information Write
ROGER F. WILLIAMS, Licensor
3420 S. W. 9th St. Des Moines (15), Ia.

® homeward is a Registered TRADE MARK.

CHASE BLOCK RACKS, PLAIN STEEL PALLETS

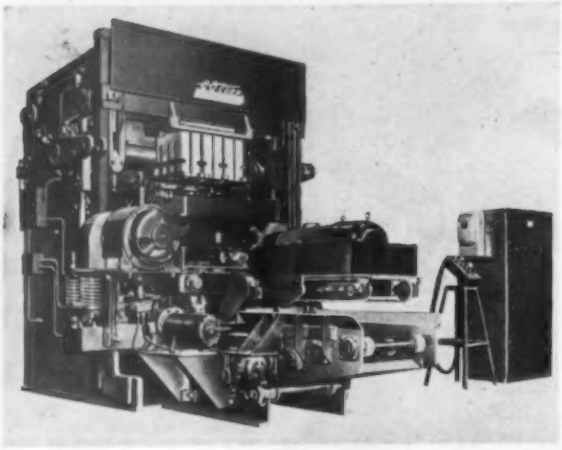
Your best buy



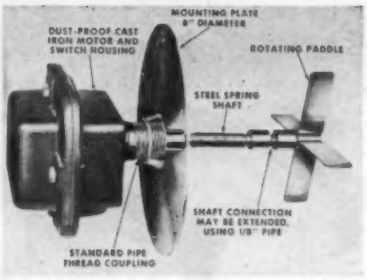
Here's why • • • Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service. Check Chase prices.

Chase FOUNDRY & MANUFACTURING CO.
2300 PARSONS AVENUE • COLUMBUS 7, OHIO

CM New Machinery and Supplies



● A new three-at-a-time plain pallet block machine, the Trustee, is now in production at the Gene Olsen Corp. Equipped with hydraulic drive, the Trustee uses a conventional vibration system that will take, without alteration, the molds of many competitive machines. Large single-action cylinders in the hydraulic are used for smooth acceleration of motion and to allow operation at low oil pressure and temperatures. The oil pump is large enough in design to supply ample flow without the use of accumulators. 10 hp. plug reversing vibrator motors eliminate the need for brakes. Capacity of this machine is 1,100 blocks per hour. ◄ (101)


MOUNTING PLATE 8" DIAMETER
DUST-PROOF CAST IRON MOTOR AND SWITCH HOUSING
ROTATING PADDLE
STEEL SPRING SHAFT
SHAFT CONNECTION MAY BE EXTENDED, USING 1/8" PIPE
STANDARD PIPE THREAD COUPLING

● The Roto-Bin-Dicator, a paddle-type bin level indicator, is now being manufactured by the Bin-Dicator Company and is adaptable for installation in bins under pressure or vacuum. Installation requires a hole in the bin wall to admit the paddle and attachments of a steel plate with 6 screws. ▲ (102)

● Two new Load-N-Gate power lift tail gates of 2,000- to 3,000-lb. capacity are now being made available by the Hercules Steel Products Co., for use on 1½-ton and larger trucks. ▲ (103)

● The Stow Manufacturing Company has begun production of a set of three grinding blocks which can be attached to the Stow G34 Roto-Trowel, in 2-, 3-, and 8-in. sizes. ▲ (104)

● A liquid-foaming chemical agent, Elastizell, a water soluble plastic agent gives air cells in Elastizell-type lightweight concrete blocks a coating of high tensile strength, also adding self-insulation, and moisture resistance. ▲ (105)

FEBRUARY, 1956

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110
111 112 113 114 115 116

Name_____ Title_____

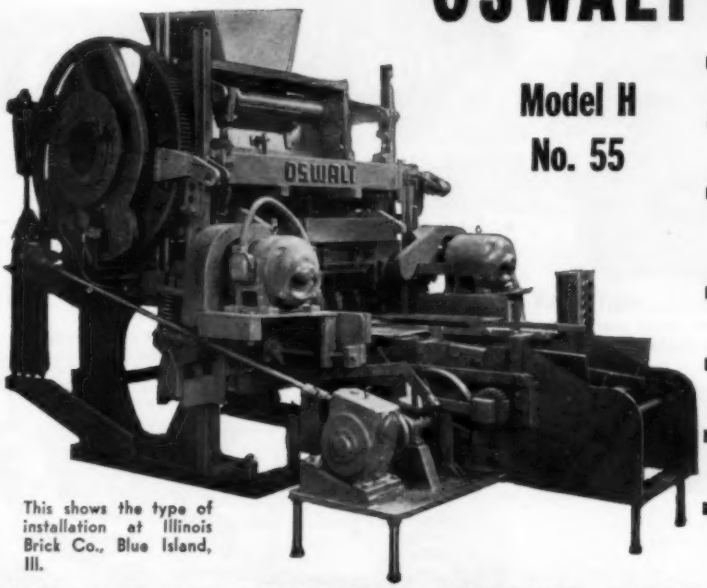
Company_____

Address_____

City_____ Zone_____ State_____

Check these Modern Features of the

OSWALT BLOCK MACHINE



This shows the type of installation at Illinois Brick Co., Blue Island, Ill.

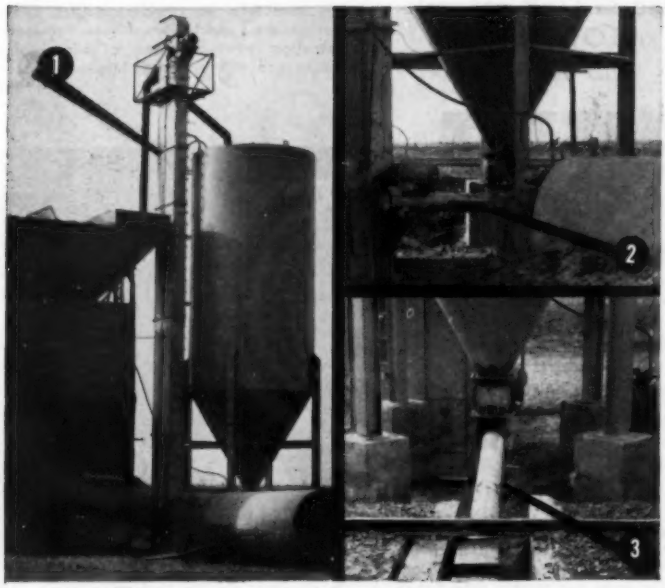
Model H
No. 55

- Massive construction with full 2" thick stress-relieved frame, and all matching parts machined for precision fit.
- Extra strength and stability with smooth relaxed operation to give long service and low maintenance.
- Shock-Free Ejector and Front-End Pallet Feeder.
- New simplified Height and Density Control.
- Improved Vibration and Production Speed-Up.
- Centralized Control Panel for easy operation.

OSWALT ENGINEERING SERVICE CORP.
1335 Circle Ave., Forest Park, Ill.
Phones: EStebrook 8-4664 (Chicago) - FOrest 6-2798 (Suburban)

Write for new Brochure of Oswalt Block Machine

BAUGHMAN CONVEYORS and ELEVATORS



for Ready-Mix Concrete Plants

Baughman Conveyors and Elevators cost less to buy . . . less to operate and maintain . . . less to set up. That's because Baughman's "Sectionalized" job-fitted design makes the big difference. Standardized units are prefabricated to enable you to assemble, shorten, lengthen or move — without the usual high erection costs.

Shown in the installation at the left are several Baughman favorites:

1. **MODEL 175 BELT AND BUCKET ELEVATOR.** Fully enclosed buckets. Centrifugal discharge. Write for BULLETIN A-299. For open bucket and belt elevators, write for BULLETINS A-392 and A-389.
2. **MODEL Q STATIONARY SCREW CONVEYOR.** For materials that roll or become fluid in motion. Underbin and undertrack screw loaders easily attached. Write for BULLETIN A-295.
3. **MODEL UT-51 UNDERTRACK CONVEYOR.** Rapid discharge. Readily integrated with other Baughman equipment. Write for BULLETIN.

SALES AND SERVICE FROM COAST TO COAST

BAUGHMAN

BAUGHMAN MANUFACTURING CO., INC.
130 ARCH ST. • JERSEYVILLE, ILLINOIS

● This Rocket "65" Concrete Transport Mixer Company has a 6½- to 7-cu. yd. capacity with a hydraulic operated chute control. A choice of industrial engines are available, as is the Rocket, in 3-, 3½-, 4½-, and 5½-cu. yd. models ▲ (106)

● Model GTX Triple-Axle Low Boy trailers, manufactured by the Transport Trailers, Inc. Five sizes provide capacities from 25 through 45-tons ▲ (108)

● Crane Carrier Corp. is now in full production of their "Mix-Master," which features all-welded, wide-flange H-beam frame. With offset cab, 15,000-lb. front axle, and heavy duty overload-type front springs this model handles the maximum legal payload with ease. ▲ (107)

● The 4½-cu. yd. Pacemaker truck-mixer has been added to the Challange line mixers, distributed by Cook Bros. Equipment Co. Challange truck-mixers are now available in nine models, 3½-, 4-; 5-, 5½-, 6-, 6½-, and 8-cu. yd. rated capacities. Other features are a shorter wheel base, two-speed operation, newly-designed 3/16-in. mixing blades and the exclusive Mixometer. ▲ (109)

Batch it *RIGHT* every time

The quick-reading dial is the key to correct yield, better slump control, more economical operation.

. . . make BETTER concrete
. . . at LOWER cost.
with your

INSTANT
MOISTURE CONTROL

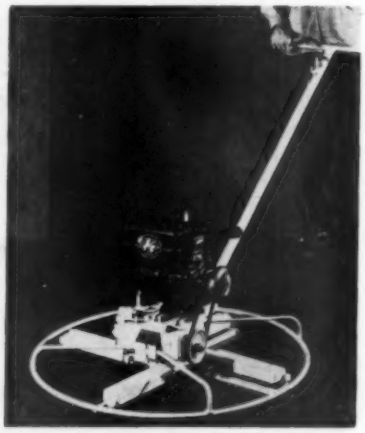
The IMC Non-Recording Instant Moisture Control gives INSTANT aggregate moisture readings for every batch. At a glance your operator can tell what corrections to make. No more wet loads rejected-no more time lost adding water to dry ones! With the IMC you can depend on specification batches every time.

And, for those operators whose work requires a permanent record of aggregate moisture, the IMC *Recording* Instant Moisture Control provides the same control checks, plus a lasting record of the moisture measurements.

Stop cash leaks in <u>your</u> operation . . . install IMC now!

See both the Recording and Non-Recording Instant Moisture Controls at the IMC booth, No. 201, at the NRMCA show in Chicago this month! Or write for further information.

IMC
INSTANT MOISTURE CONTROL
A DIVISION OF COLORADO PREMIX CONCRETE CO., 1021 W. MISSISSIPPI, DENVER, COLORADO



● Marring, digging in (and sudden motor strain which might be caused by the blades striking loose pieces of aggregate are the features of this hydraulic trowel made by the Kelley Machine Division of Wiesner-Rapp, Inc., using an automatic clutch made by the Mercury Clutch Division of Automatic Steel Products, Inc. ▲ (110)

SIDE-O-MATIC

UNLOADS ON BOTH SIDES AND REAR

UNLOADS INTO BASEMENTS

PARTIAL LIST OF SATISFIED USERS:

Raymond W. Bartlett
West Creek, New Jersey

Alico Concrete Products Company Inc.,
Patchogue, Long Island, New York

City Cement Block Company,
Bridgeport, Connecticut (2 units)

Marquart Concrete Block Company,
Waterloo, Iowa

The Plasticrete Corporation
New Haven, Connecticut

Nitterhouse Concrete Products,
Chambersburg, Pennsylvania

South Hammond Concrete Products Co.,
Hammond, Indiana

Maule Industries, Inc.,
Miami, Florida

Tait Block and Supply Co.
Port Huron, Michigan

Concrete Masonry Corporation,
Elyria, Ohio (2 units)

Binkley and Ober, Inc.,
East Petersburg, Pennsylvania

Apex Coal and Supply Company,
Cleveland, Ohio

The Michigan Silo Company,
Peoria, Illinois (2 units)

The Ideal Builders Supply & Fuel Co.
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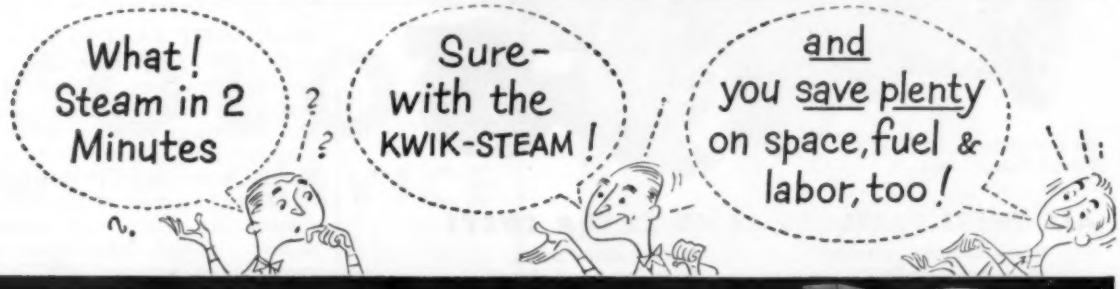
SIDE-O-MATIC UNLOADER CORP.

P. O. Box 1561, York, Pa. • Phone York 7357



LITTLEFORD KWIK-STEAM VAPOR GENERATOR

Yes, you get full pressure steam in 2 minutes from a cold start with the Littleford Kwik-Steam Vapor Generator! Exclusive automatic modulatic control reduces fuel and labor costs 50%. Compact design saves valuable floor space and cuts installation cost. Unit is shipped complete, ready for mounting on concrete base. And be sure to check the Littleford pile pounder generator which can easily be mounted on truck, crane or trailer. Write today for bulletin 22, Littleford Bros., Inc., 403 E. Pearl St., Cincinnati 2, Ohio.

LB LITTLEFORD

BLACK TOP ROAD EQUIPMENT SINCE — 1908

Designed exclusively for generating steam for ready-mix, pile driving, concrete curing products, asphalt plants.

25th Anniversary

Combination WORKhorse and RACEhorse! that's

The new ROCKET "65"

Seldom do you find a piece of machinery that combines the strength, durability and dependability of a WORKhorse with the speed and mobility of a RACEhorse. But that's what ready-mix operators are saying about the new Rocket "65"—a versatile 6½ to 7 yard mixer. The Rocket is designed and engineered to operate for years at maximum efficiency, with surprisingly little maintenance. Every conceivable ease-of-operation feature, *plus* tremendous strength, has been *built in*.

After you've bought a Rocket, you'll agree that it is both the workhorse *and* racehorse of your fleet!

Also available in 3, 3½, 4½, 5½ yd. models.

See us at booths Nos. 231-2-3-4-5-6 Coliseum, Chicago—Feb.13-16

ALL THESE FEATURES *at NO EXTRA COST!*

HYDRAULIC CHUTE CONTROL eliminates man-handling. Controls grouped for easy access.

ALUMINUM EXTENSION CHUTE attaches to 36" fold-over addition to main chute. Total length: 12' 6".

ELECTRIC REVOLUTION COUNTER kit included; you can handle any specifications with the Rocket!

SPECIAL ALLOY, abrasion resisting steel used at all wear points.

UNOBSTRUCTED HOPPER, for rapid charging, no spilling or waste.

POSITIVE CHAIN DRIVE, flexible power, not affected by truck twist, road shock.

STANDARD INDUSTRIAL ENGINE, truck-type transmission. Repair parts readily available.

THREE-POINT SUSPENSION, one-piece cast steel precision machined ring.

DEMAND THE BADGE OF DEPENDABILITY

CONCRETE TRANSPORT MIXER CO.

MAIL THIS COUPON TODAY!

Gentlemen: Please rush full information, prices and terms on the following:

☐ New Rocket Revolving Drum Truck Mixer CM
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New Literature

"THE COMPLETE PACKAGE", a bulletin released by the *Blaw-Knox Company,* manufacturers of heavy road building equipment, fully describes the line of machinery with improvements and variations. Included are: The MultiFoote concrete paver; steel paving forms; a precision subgrader; a concrete spreader with vibrator, a finishing machine; an aggregate batching plant; a cement batching plant; and any additional equipment needed by the consumer. **(111)**

TRANSMISSION TOPICS, the monthly magazine published by the *Fuller Manufacturing Company, Transmission Division, of Watson Bros. Transportation Co., Inc.,* contains a special feature in the first edition for 1956, which pertains to the new Oshkosh 50-50 4-wheel drive Ready-Mixed Concrete Carriers. **(112)**

AGITOR, the 4 cu. ft. concrete mixer with paver is the subject of the *S & M Manufacturing Company's* latest bulletin. Designed for speed of operation, the AGITOR takes just 35 seconds to discharge its maximum load of low slump concrete. **(113)**

SEALTIGHT PAVING products made by *W. R. Meadows, Inc.,* are cataloged in a new publication. Included are: Asphalt expansion joints; fibre expansion joints; center strip; dummy joints; concrete curing compounds; subgrade paper; base plate; rubber asphalt joint seal; sewer joint compounds; and road marking paints. General information and specifications are explained in detail. **(114)**

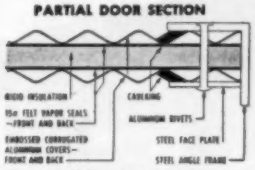
TWO-WAY RADIOS, a product of the *Motorola Communications and Electronics Divisions, Inc.,* are fully described in a series of booklets with a supplement called "Radio and Concrete Really Mix." This supplement contains information concerning the benefits to both ready-mix operator and customer, with the speed of operation. **(115)**

HYDROTILE machines, a product of the Nashua Tile Company, are pictured in a bulletin issued recently. Simply designed, with a minimum of wearing parts, the HydroTile enables the concrete pipe and tile manufacturer to operate on an assembly-line basis. Models 4-36 and 6-36 produce pipe in sizes 4-ft. long with 6- to 36-in. diameters and 6-ft. long with 6- to 36-in. diameter, respectively. **(116)**

Above: Universal Kiln Doors, Door Carrier Equipment, and Sliding Utility Doors at Cinder Block & Material Co., Indianapolis, Ind.

Kiln closure equipment is no place for tin-pan construction. Be sure the equipment *you* buy has the *guts* to give you efficient operation and long trouble-free service. Write, wire, or phone for detailed information.

PARTIAL DOOR SECTION

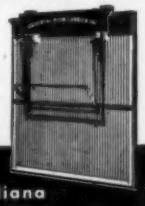


All welded and riveted assembly. Complete internal drainage system for condensation.

Universal

KILN DOORS and DOOR CARRIERS

NEW *Uni-Seal Door Gasket and Cement—*
NEW *Uni-Coat Rust Preventive Coating*



UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

COLOR WITH SERVICE

- **2** PLANTS TO PRODUCE CUSTOM MADE COLORS
- **2** LABORATORIES TO WORK OUT YOUR COLOR MIXES

Let us discuss with you how to obtain the most coloring power at the lowest cost.

Warehouses at all Important Points of Distribution

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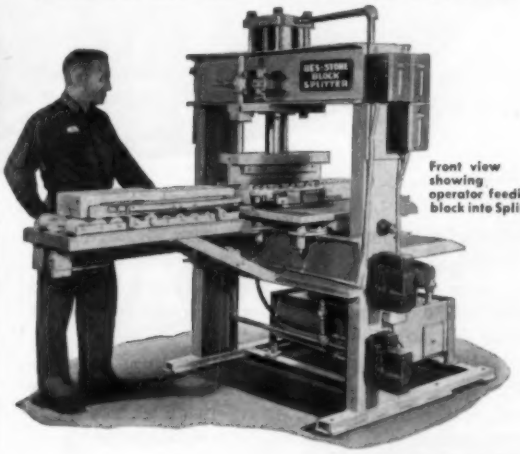
"Cash in" on the Demand for

SPLIT BLOCK

Install a BES-STONE Splitter

You can greatly increase block sales and add to profits by using a Bes-Stone Block Splitter. Architects and builders are sold on Bes-Stone Split Block because of its beautiful quarried stone appearance and wide range of adaptability. With its powerful, hydraulic operation, the Bes-Stone Splitter handles up to 900 units per hour. All straight line cuts. No cull block. Quickly adjustable for various heights. Finished Split Block is automatically removed from under the splitting knife by the incoming block. Quiet, safe operation.



Front view showing operator feeding block into Splitter.

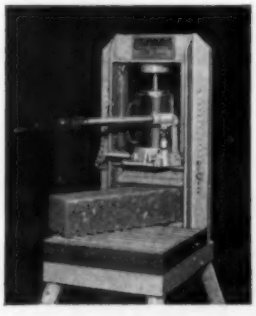
. . . and this

PONY TRIMMER

Comes in Handy for

Trimming Block on the Job

Trims off the ends of split block up to 8" in width. Pressure is supplied by a hand-operated hydraulic pump having a capacity of 12 tons. Compact, lightweight, and easily portable from job to job.



Ask your Besser representative for literature, or write:

BESSER COMPANY
Complete Equipment for Concrete Block Plants
ALPENA, MICHIGAN, U.S.A.

A 8500-½

Will this blot spread... or shrink?

NOTHING STRIKES so brutally at human lives as a slum.

Yet of America's many millions of homes, the blot that is a slum covers more than 1 out of every 10 . . . and nearly one-half of all our homes are urgently in need of repair and basic improvements.

Will the blot go on spreading? Or will a concerted, nationwide attack on the causes of slums shrink it, year by year, until it is wiped out? Today, this is a challenge to every American . . . a challenge that *must* be met.

Your community . . . your problem!

A slum reaches across blocks, across miles, to sit on your doorstep and demand a price.

You pay it in the threat of crime and juvenile delinquency to your family. You pay the price in higher personal property taxes to fight the disease and crime and poverty that are slum-bred. You pay personally when the value of your home sinks as community deterioration takes another step closer.

Your *firm* pays when the community where you do business goes downhill. Slums automatically mean lower purchasing power and less effective labor.

Good citizenship is good business

It's good citizenship and good business both for your firm to join efforts to check housing decay . . . to stop slums before they start. In fact, it's the *responsibility* of every business, as it is of every other good citizen, to support community improvement efforts.

Some slums are beyond repair. They should be torn down and a fresh start made. Others can be remodeled, made to conform to better living standards. So it is up to you to get behind every sound program which seeks to provide adequate housing for all our people.

Adding your support to the efforts of the millions already attacking the problem, your firm can help stop slums cold and put America's housing standards at a new height.

How to get into action

A group of Americans from every walk of life has formed a new, non-profit organization to help combat home and community deterioration — The American Council To Improve Our Neighborhoods . . . A.C.T.I.O.N.

Send for a free copy of "ACTION." It explains what A.C.T.I.O.N. is and proposes to do. It also lists booklets, research reports, check-lists, and other material which can help you protect the housing health of your community. Address P. O. Box 500, Radio City Station, New York 20, N. Y.

ACTION

American Council To Improve Our Neighborhoods

NOW! CMC TRANSCRETES®
Available in 4 Sizes!

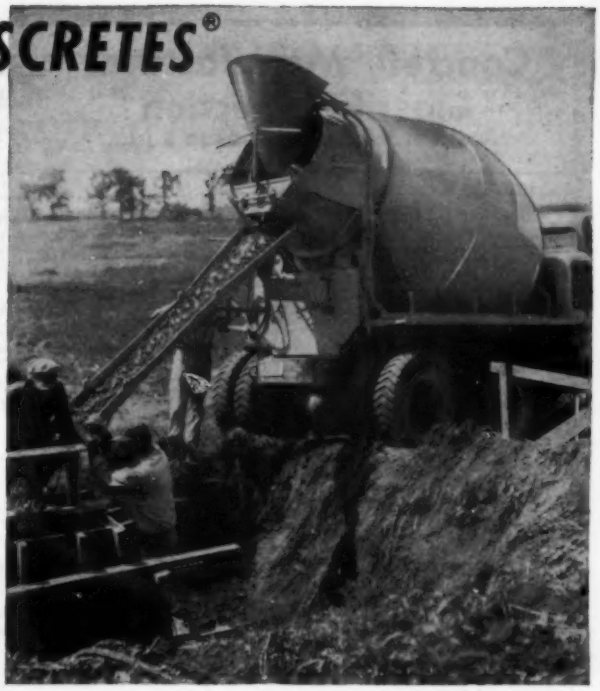
3½ to 7–yard mixing capacities (comparably larger as agitators).

Shorter over-all length for BIGGER LEGAL PAYLOADS.

• The new TRANSCRETES are America's only truck mixers with famous trouble-free CMC FLOATING DRIVE. They are faster charging — have more thorough mixing — quicker discharge on any type, any size job — anywhere.

Write for *NEW, FREE* Fully Illustrated TRANSCRETE BULLETIN

Construction Machinery Co., Waterloo, Iowa



NEW MODEL 700 above, hauls up to 8-plus yard loads, guaranteed to mix any 7-yard batch. 75" drum head, 16° slope for shorter over-all length, more favorable center of gravity, larger legal payloads. CONSTRUCTION MACHINERY CO., Waterloo, Iowa.

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this new Erickson is

AR-TIC-U-LATED

IT TURNS IN THE MIDDLE— TAKES THE CORNERS LIKE A BREEZE

Write for literature

Erickson has created a revolutionary new idea in platform trucks—it's ARTICULATED—with a joint or pivot between platform and drive wheels. Models P-7A and P-10A are the units for the new and unusual operations,—autoclaves, for instance—where you need utmost maneuverability with heavy duty capacity. With the ARTICULATED design, platform bed can be made up to 10 or 12 feet and still handle heavy, bulky loads with ease. These articulated models are in addition to the veteran Erickson P-5 and P-7 standard models, and built with the same rugged durability.

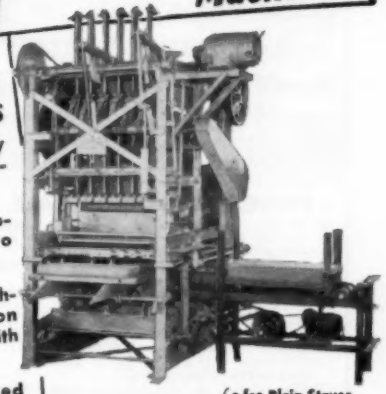
the WORKHORSE of LIFT TRUCKS

Erickson

POWER LIFT TRUCKS, Inc.

225 St. Anthony Blvd. N. E., Minneapolis 18, Minn.

NEW **OK** *Automatic* **SILO STAVE** *Machines*



Check these OK Features

- **Automatically timed and controlled.**
- **Uniform Tamping—the Key to Perfect Staves!**
- **One-Man, Push-Button Operation (when used with OK Air Hoist).**
- **Hand Polished Machined Molds.**
- **4-5 Staves per minute, up to 1500 per 8-hr. shift.**

Now ONE MACHINE { • for Plain Staves • Interlocking Staves • Corrugated Staves

This New OK Automatic Machine will multiply the money-making potential in your territory. Sell more Silo Staves—use high production OK Equipment.

Write for Complete Details TODAY!

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If you are a concrete products manufacturer, or going into the business; here is a line, either side or main, that will bring you a tremendous profit.
Learn the secret of pre-casting and installing HANNAWAY PRE-CAST CONCRETE STAIRWAYS, STEPS, and PORCHES. Learn all these closely guarded secrets of our ten years experience. We will come to your plant, teach you and your employees our system of pre-casting, installing, and selling. We will also supply all moulds necessary for immediate operation. All this for one small fee, no royalties, or products to buy.
We will only teach one concern in each city or county (depending on size). So be the first to start in your city! Call or write today.

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Three (3) Concrete Truck Mixers, all in good condition.
1—3½ yd. Ransom G.M.C. 1950
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1—5½ yd. Ransom Autocar 1950
Priced to sell.

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FOR SALE

The equipment listed comprises a block plant that has been replaced by owner with equipment of a greater productive capacity:
F. C. George Block Machine, Model 300, Serial No. DA-576-G630-300
1—8x8x16" Mold. 1—4x8x16" Mold. 1—Redi Fused Mold
2—Yale Lift Trucks
40—48 Block Racks, Steel
2300—8x8x16" Aluminum Pallets
1500—4x8x16" Pallets
2000—8x8x16" Pallets
Miscellaneous Mold Parts for Making Corners, halves and solids.

Terms Available
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PRICED FOR QUICK SALE

As we have purchased larger Stearns equipment, we have the following good used equipment for immediate sale:
1—Stearns Zipper (semiautomatic), serial No. Z-49.
1—Stearns 18 cu. ft. mixer, with V-belt drive.
1—Pallet oiler.
44—Racks.
1—4" ATTACHMENT.
950—4" cored steel pallets, Code ZONAL.
1,120—4" steel plate pallets (for 4" solids).
1—8" ATTACHMENT.
1,325—8" regular, cored steel pallets, Code DRAM.
150—8" double corner, cored steel pallets, Code DRESS.
100—8" regular sash, cored steel pallets, Code DROSS.
100—8" single bull nose, cored steel pallets, Code LADLE.
100—8" single bull nose sash, cored steel pallets, Code LYCON.
100—8" double bull nose sash, cored steel pallets, Code LOBBY.
1—10" ATTACHMENT.
540—10" regular, cored steel pallets, Code FUNGUS.
80—10" double corner, cored steel pallets, Code FORTRESS.

BYRUM BLOCK COMPANY
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ENGINEER (MASTER MECHANIC) TO RUN CONCRETE PRODUCTS AND READY MIX PLANT. SALARY IN FIVE FIGURES.

Box CM-116 c/o THE CONCRETE MANUFACTURER
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FOR SALE

30" Gardner Double Spindle Grinder.

BOX NO. CM-405, c/o THE CONCRETE MANUFACTURER
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FOR SALE

1—#9 Riddell Dry Pan Cinder Grinder, capacity 30 tons per hour.

BOX CM-114 c/o THE CONCRETE MANUFACTURER
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Twin Cessna Demonstrator Model 310, many extras. New engines, full instrument, excellent condition. Collins radio equipment throughout. Would share ownership in Great Lakes area.

Two 1953 Austin-Western Patrol Graders, one model 88H, one model 99H, excellent condition.

Two heavy duty tanks, 19'-6" long, 6'-6" diameter, 4500 gallon capacity, pressure or suitable for liquid chloride.

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WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY

Specialists in Concrete Products Equipment

Eastern Representatives of the
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Elevators Bins Conveyors Feeders

SPECIALS

Short Conveyors 14" to 24" built to order.
New & Used Bin Gates, Simplex & Duplex.
Small Jaw Crushers for Broken Block.
Universal Vibrating Screens in stock.
2—Bonded Cinder Roll Crushers.

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BRICK MORTAR
STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
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HENRY, VIRGINIA

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Located booming central Florida city. Late type batching facilities and transit-mix equipment. Will sell outright or will sell on lease basis to responsible party.

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3 complete rectangular 2 pc. 600 gallon tank septic tank forms that comply with F.H.A. and State Codes. 8 extra 24" dia. manhole covers that can be poured with the tank. Other handling equipt. can be made if requested. Faster pouring stripping and setting up than other forms now offered on the market. For further information address inquiries to

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COLUMBIA AUTOMATIC BLOCK MACHINE. In excellent condition. May be seen in operation. 27 racks, 800 pallets, 8 molds in like new condition. Offbearer, hydraulic power unit, pallet return cleaner, 21 cubic foot mixer. Will sell complete for $10,500.00

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FOR SALE

1—LITH-I-BLOCK, L-6, AUTOMATIC 2-BLOCK MACHINE, for ¼" x 18" x 20" plain steel pallets. With automatic pallet return, oiler and cleaner. With the following molds and mold conversion parts:
1—4" x 8" x 16" MODULAR MOLD, with parts for half length, and 1⅝", 2¼" and 3⅝" thick solids.
1—6" x 8" x 16", 2-CORE TYPE, MODULAR MOLD, with parts for corners, sash, single and double bull nose units, and halves.
1—8" x 8" x 16", 2-CORE TYPE, MODULAR MOLD, with parts for corners, sash, single and double bull nose units, and halves. Also, bond beam and beam lintel units. With mold conversion parts for 12" x 8" x 16" modular units, with parts for corner, sash, and halves.
1—CHIMNEY BLOCK MOLD, for 16" x 16" ventilated or solid wall type units. With conversion parts for pilaster units.

COMPLETE and IN GOOD CONDITION

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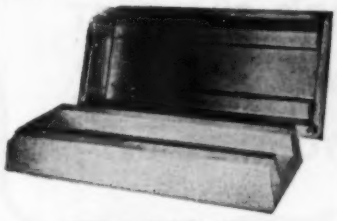

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COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:

LANDERS-SEGAL COLOR CO.

71 Delavan St. • Brooklyn 31, N. Y.

FOR SALE

The equipment listed herein comprises a complete operating block plant, that has been replaced by owner with equipment of a greater productive capacity.

Fleming MC-180 Machine, Serial No. 76 with Roller Feed Drawer in excellent condition.

5 Mold Boxes, including the following: 4, 6 and 8" Header Molds
Bullnose
Attachments to make 4 and 6" halves, Pier, Sash, Corner and Cap Blocks

12 Cubic Foot Stearns Mixer, Serial No. 12781, with hardfaced bar liners and almost new blades complete with motor and drive. Also some extra liners.

20 Cubic Foot Hopper
Overhead Electric Crane for charging 38-48 Block capacity Steel Racks
1500—2" Wood Pallets

1 Boiler, 6 Horsepower.

Terms available

ALLISON CONCRETE PRODUCTS
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unbreakable
PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

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1170 pieces of 5/8"x17½"x17½" treated plywood pallets, at 30c each F.O.B. Batesville, Indiana.

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Phone 1692

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Used Concrete Pipe Forms—6' in length. From 15" to 48". Write to:

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Four 4½ cu. yd. High Discharge Truck Mixers, separate engine drive. All mounted on dual rear axle trucks with 10 x 20 tires front and rear. Trucks and mixers operating now. Bargain for lot sale.

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22800 W. Eight Mile Rd., Detroit 19, Mich.
Phone: KEnwood 1-7793

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Wanted by established block plant. Must be able to make adjustments and repairs. Some welding. Lith-I-Bar machine experience desirable. State age, education, experience and salary wanted.

NOLAN BROWNE COMPANY • P. O. BOX 575
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PLAIN STEEL PALLETS

Guaranteed Quality
Flat • Square • Accurate
GARY STEEL SUPPLY COMPANY
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Fork and platform power lift trucks, used and guaranteed factory rebuilts.

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#9 JOLT CRETE—3 AT A TIME

4000 8" Equiv. A DAY Excellent condition. 8" & 12" attachments with approx. 4800 8" & 2700 12" pallets. Approx. 100 Chase block cars, transfer cars, rail and turntable. Many spare parts for machine included. ALSO a complete drag line with 75 h.p. motor.

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Pumice Block Plant, established 14 years, good gross with high net, only one in trade area of 50,000. Located in one of the best booming towns in entire state of Wyoming. Definitely priced to sell. Information and free photos mailed, no obligation whatsoever on your part. C-5350 Continental, 804 Grand, Kansas City, Mo.

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Winchester Concrete Prod., Inc.
Box 571 Winchester, Va.
Phone Mohawk 2-3608

LOWER COST
packer-head wings

Proved to last as long or longer — yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

TWO (2) MODEL CPX JACKSON & CHURCH CO.'S BRICK MACHINES (COMPLETE WITH MOTORS & FEEDERS)

These Presses are in daily operation and may be seen in our plant in Detroit, Michigan.

PRODUCTION CAPACITY
8 HOURS — 25,000

We need the floor space occupied by these presses for other machinery.

WE ALSO HAVE A COMPLETE INVENTORY OF SPARE PRESS PARTS.

Machines are priced very reasonable and must be moved prior to April 1st, 1956.

DETROIT BRICK & BLOCK CO.
85 South St. Jean • Detroit, Michigan
Telephone: VAlley 2-4879

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All shades and grades the highest quality. Write for color cards, prices and samples

RICKETSON MINERAL COLOR WKS.
MILWAUKEE 2, WISCONSIN
Established 1885

WANTED

Jackson & Church Six Pocket Brick Press.

Also 50 cu. foot mixer

AMPRESS BRICK CO., INC.
1228 Harding Ave. Des Plaines, Ill.

FOR SALE

Norwalk 536 or 600 gal. septic tank, cover and baffle molds. $450.00
Forklift Truck—made in our shop. Lifts 75 block cubes. Ideal for unpaved yards..$500.00

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Richmond, Ill. Phone 4561

Concrete Pipe Forms & Vibrators

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and
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here comes our second!

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new plant near Toronto to start production january 1, 1957 combined with Quebec plant, annual production will be 18,000,000 bags PORTLAND CEMENT

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HEAD OFFICE: VILLENEUVE, QUEBEC, TEL.: MONTCALM 3-7831

Maybe you haven't thought of "The Concrete Manufacturer" as a tool. Still, that's exactly what it is—a tool that can help you run your business more efficiently and more profitably.

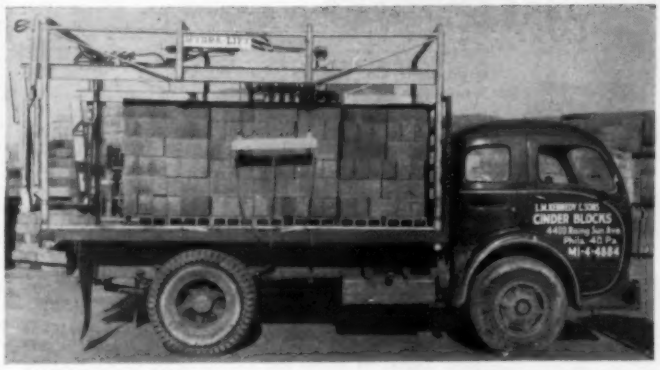
What's more, it doesn't cost you a cent to subscribe to The Concrete Manufacturer. We'll send you our magazine free each month if 1) you are a *bona fide* producer of concrete masonry units and/or ready-mix concrete, and 2) if you let us know exactly what these products are.

Write on your company letterhead to

***The* CONCRETE MANUFACTURER**

431 S. DEARBORN ST.
CHICAGO 5, ILL.

HYDRA-LIFT UNLOADER



WHY LET DELIVERY COSTS EAT UP YOUR PROFITS?

After several months use of their first HYDRA-LIFT, *L. M. Kennedy and Sons, 4400 Rising Sun Ave., Philadelphia, Pa.*, made a cost check to see just what HYDRA-LIFT was saving them as compared to former manual unloading.

A saving of more than $20.00 per working day showed that the Unloader would pay for itself well within the year. As a result, Kennedy's are now operating their second HYDRA-LIFT and with it are realizing similar savings.

Our HYDRA-LIFT customer list continues to grow. A number, like Kennedy's, now experience multiple savings through the use of several Unloading units. Two such are:

Kurtz Bros. Concrete, Inc.
Mr. Kreider Kurtz, Pres.
Ephrata, Pa.

Samson Block & Supply Co., Inc.
Mr. S. W. Williamson, Pres.
Media, Pa.

UNLOAD TWO CUBES AT A TIME • UNLOAD WITH EASE ON HILLS
UNLOAD INTO BASEMENTS

Dealer Inquiries Invited

FOR FULL DETAILS AND PRICES Write or phone:

HAVERSTICK BROS.
2111 Stone Mill Road
Lancaster, Pennsylvania

PHONE 2-5722

Mfrs. of BLOCK UNLOADERS for over TWO YEARS

YOU CAN COUNT on CARPENTER

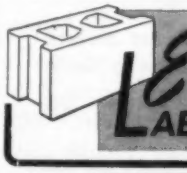
TESTED Septic Tank Equipment Expands Concrete Profits!

Faster construction *plus* lower costs *plus* better products equals top profits in making septic tanks. This sums up the perfect answer supplied by CARPENTER Equipment. *One man* handles our Delivery Rig. That's why the list of satisfied CARPENTER customers is country-wide.

Write for Details
CARPENTER MANUFACTURING COMPANY
PHONE 28938
HARVIE ROAD, CARRIER 94, BOX 470, RICHMOND 23, VA.

NR Plastic

1 TABLESPOON OF DRY POWDER Per Bag of Cement Produces
Greater Plasticity
IN THE GREEN UNIT *Plus*
20% Lighter Color
COST—½¢ per Bag of Cement!



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A "FIRST CLASS" DRAIN TILE MANUFACTURING BUSINESS

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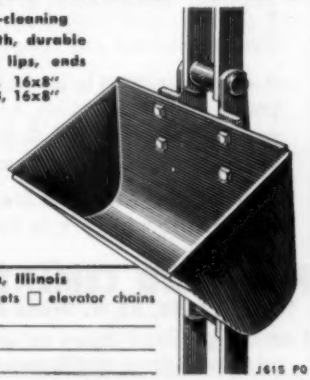
JOHNSON all-welded ELEVATOR BUCKETS

- **smooth — fast-filling, quick-cleaning**
- **light in weight, high-strength, durable**
- **heavy-gauge, long-wearing lips, ends**
- **cement: 10x6, 12x7, 14x8, 16x8"**
  aggregate: 10x6, 12x7, 14x8, 16x8"



Long-life CHAIN

- **carburized steel knuckles**
- **med.-high carbon side bars**
- **alloy heat-treated ⅝" pins**
- **welded bucket lugs**

C. S. JOHNSON CO., Champaign, Illinois
Send more information on: ☐ buckets ☐ elevator chains
NAME_____
STREET_____
CITY, STATE_____

J615 PO

Check these construction practices to strengthen your market for

CONCRETE MASONRY

The first requisite for a successful concrete masonry business is making block that comply with applicable specifications for strength, dryness and absorption. However since your customers buy walls, not block, you can strengthen your market by making on-the-job inspections to promote quality construction. Use this check list:

1 See that concrete block stored on the job are protected from rain and snow.

2 See that tops of unfinished walls are covered each day to keep moisture out of cores in block.

3 Make sure that the masons do not pre-wet the block before applying mortar.

4 Discourage notching or cutting block around pipes, as this creates weak vertical sections.

5 Advise use of control joints to relieve stresses due to shrinkage and temperature changes.

6 Advise painters to let surface of caulking compound in control joints harden and then coat with shellac to prevent oils from bleeding through where portland cement base paint is to be used.

Send for free *"Concrete Masonry Handbook."* It is distributed only in the U.S. and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. 2-58, 33 W. Grand Ave., Chicago 18, Ill.

A national organization to improve and extend the uses of portland cement and concrete...through scientific research and engineering field work

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*See also Detailed Information in 1955 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

new-design PAYLOADER® cuts ...handling time 1/3

Concrete Ready-Mixed Corp. serves a 15-mile radius around Roanoke, Virginia. Their "PAY-LOADER" scoops-up material from stockpiles and carries and delivers it to a receiving hopper. The unit handles about 33,000 tons of sand annually in addition to smaller percentages of stone. D. G. Lindsey, Supt. and Vice President, says,

"We thought our old HA 'PAYLOADER' was efficient, but the new-design HA has cut handling time more than one-third. The torque converter saves wear and tear on tires and machine — is also easier on the receiving hopper. Our old 'PAYLOADER' worked 9 years."

There are proven models in the complete "PAYLOADER" line to meet the needs of ready-mix and concrete products plants—also big 4-wheel-drive units up to 2 cu. yd. for digging, stockpiling, truck loading and road maintenance in pits and quarries.

Both front-wheel-drive and 4-wheel-drive sizes have the efficient new Hough bucket action with 40 degree roll-back at ground level that gets bigger loads easier—carries bigger loads faster, more safely. All "PAYLOADER" models are full of features and advantages that result from Hough's pioneering and greater experience in tractor-shovel manufacture.

SAY "HUFF"

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Your nearby Hough Distributor is ready to help you select the "PAYLOADER" that best fits your needs.

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Send data on front-wheel-drive "PAYLOADER"
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Rear-wheel-drive
☐ model HF (1 cu. yd.) ☐ model HFH (1⅕ cu. yd.)

Four-wheel-drive
☐ model HO (2 cu. yd.) ☐ model HH (1½ cu. yd.)
☐ model HU (1 cu. yd.)

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Save up to $500.00

ON YOUR NEXT GAS FORK TRUCK

Priced about 25% under any other gas trucks in the popular 4000 lb. capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to $500.00 on your next gas fork truck. Write to The Baker-Raulang Company, 1215 West 80th St., Cleveland 2, Ohio.

Subsidiary of Otis Elevator Co.

BAKER

"Yardloader"

TRADE-MARK

56Y4

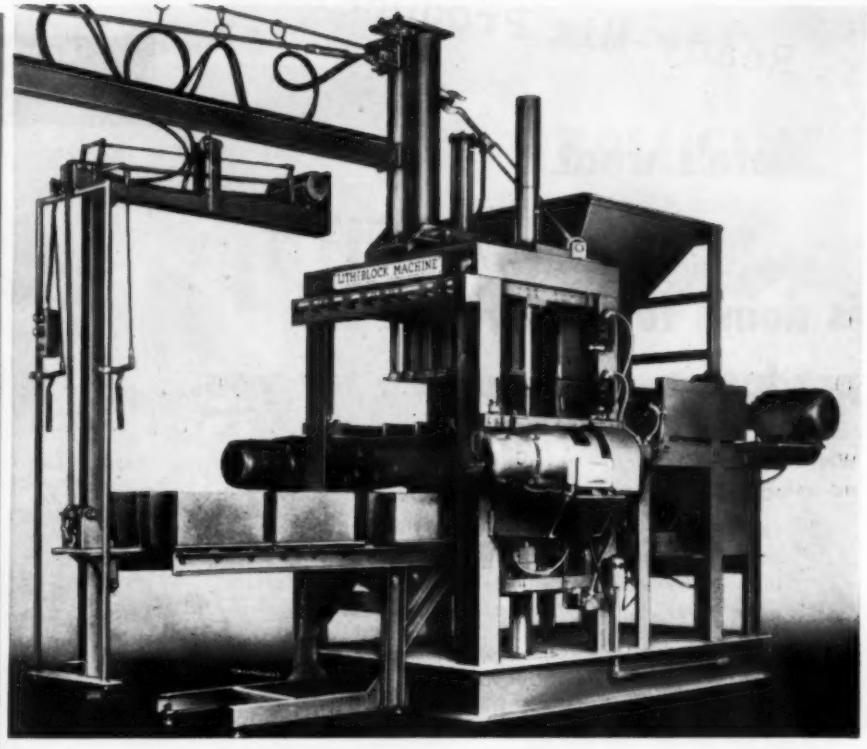
The hydraulic power package used with the new Lith-I-Block Machine has 12.5% more power than used with other block machines. This means greater speed and more units per day.

Improved feed drawer with Rota-Posed agitation. Fills mold box in ½ the former required time. No shakers needed.

Micro-justable vibration gives you the most-compacted building units produced — and volume up to 50% more than ever before.

The NEW Lith-I-Block Machine is heavier and bigger.

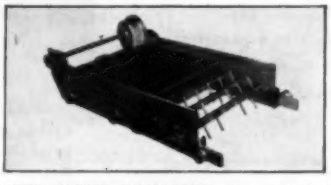
Redesigned air-operated Lith-I-Block Machine has increased output — up to 50% greater capacity.



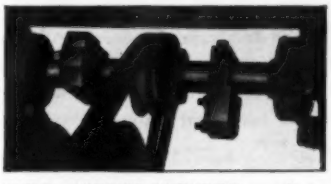
GO MODERN — GO LITH-I-BLOCK

LITH-I-BLOCK "Greater Production Machines"

NOW... HYDRAULICALLY or AIR POWERED



ROTA-POSED AGITATION — provided by three heavy-duty rotating shafts with interlocking fingers.



MICRO-JUSTABLE VIBRATION — vibrator weights are adjustable to any vibration intensity desired.

BONUS QUALITY
LITH-I-BLOCK
MADE ONLY ON THE LITH-I-BLOCK MACHINE

THE BLOCK WITH THE ***PROVEN FEATURES*** *MOST WANTED BY BLOCK PRODUCERS*

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ONE PIECE OF EQUIPMENT OR A COMPLETE PLANT LAYOUT

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Send me latest bulletins on Lith-I-Block Machine.

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CITY & STATE_____

Mr. Ready-Mix Producer--

here's what POZZOLITH is doing for 700 ready-mix producers...and can do for you...

With Pozzolith in your concrete mix designs you gain these advantages:

1. economies with Pozzolith are immediate and substantial. With a given set of materials, Pozzolith will produce concrete of a given strength and workability *at a far lower cost than is possible by any other means.*
2. you produce better quality concrete—concrete that has more placeability, is easier to finish and has less tendency to segregate. These are some of the benefits of Pozzolith concrete that reduce complaints and make for *customer* satisfaction.
3. you produce concrete that has minimum shrinkage, low permeability and great durability, thereby building *owner* good will.
4. you get *proven performance*—more than 115 million cubic yards of concrete produced with Pozzolith for all types of jobs.
5. Pozzolith adaptations permit rigid control of entrained air and adjustments in rate of hardening to precisely meet varied job requirements.
6. with one type of cement and Pozzolith you are equipped to produce air-entrained concrete, high early strength concrete, "watertight" concrete, low shrinkage concrete and low heat concrete.
7. adding Pozzolith is easy and accurate with the push-button dispenser.
8. more than 75 full-time Master Builders field technical men provide valuable product-use know-how. One of these men on your team will assure maximum benefits to you and your customers.

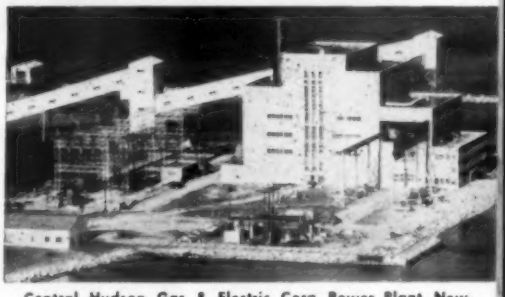
It's for these reasons that over 700 ready-mix producers are employing Pozzolith in "strength concrete" and commercial concrete.

If you are not already using Pozzolith, it will pay to contact your local Master Builders' man for information on getting started.

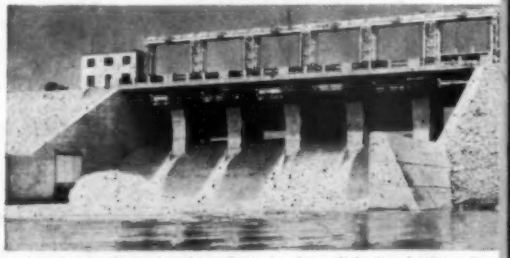
Representative jobs in which POZZOLITH Ready-Mixed concrete was used

Parking Authority Garage, Philadelphia, Penna. Pozzolith Ready-Mixed Concrete supplied by Warner Co., Philadelphia.

Permanente Foundation Hospital, Los Angeles, California. Pozzolith Ready-Mixed Concrete supplied by Graham Brothers Co., Los Angeles.



Central Hudson Gas & Electric Corp. Power Plant, Newburgh, N. Y. Pozzolith Ready-Mixed Concrete supplied by Hudson Valley Concrete Co., Newburgh, N. Y.



Fanshawe Dam, London, Ontario. Pozzolith Ready-Mixed Concrete supplied by Red-D-Mix Co., Hamilton, Ontario.

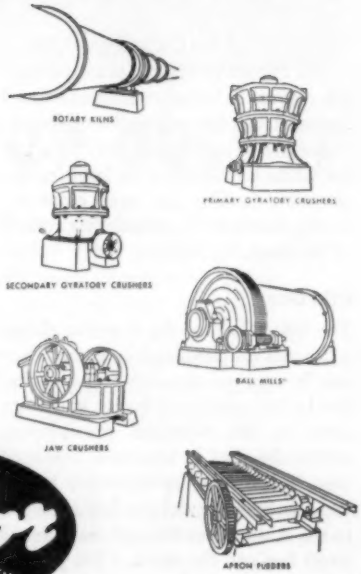
The MASTER BUILDERS Co

CLEVELAND 3, OHIO • TORONTO, ONT. Division of American-Marietta Company Cable Address, Mastmethod, New York

EXCLUSIVE *Traylor* FEATURES OF THE TC GYRATORY

ASSURE PEAK PRODUCTION AT MINIMUM COST

The Traylor TC is a gigantic crusher with the proven ability to combine high hourly output with amazing production economies . . . that's why leading producers the world over rely on Traylor TC Gyratory Crushers. All TC Gyratory Crushers have certain exclusive Traylor features in common; for example, Traylor's original, non-chokable Bell Head and Curved Concaves. Curved crushing surfaces apply power as a *direct* force to reduce lifting and churning. Each succeeding zone in the crushing chamber is of greater capacity . . . choking and packing is practically eliminated . . . that's why a TC stands up to the continuous punishment of steady operation. Traylor Curved crushing surfaces wear evenly overall to retain their original shape almost indefinitely.



- Traylor TC Gyratory Crushers are made in 7 sizes with feed openings from 20″ to 60″. Hourly capacities up to 2860 tons. Power requirements from 150 to 450 H.P.

- For complete details on Traylor TC Gyratory Crushers send for your free copy of Traylor Bulletin #126.

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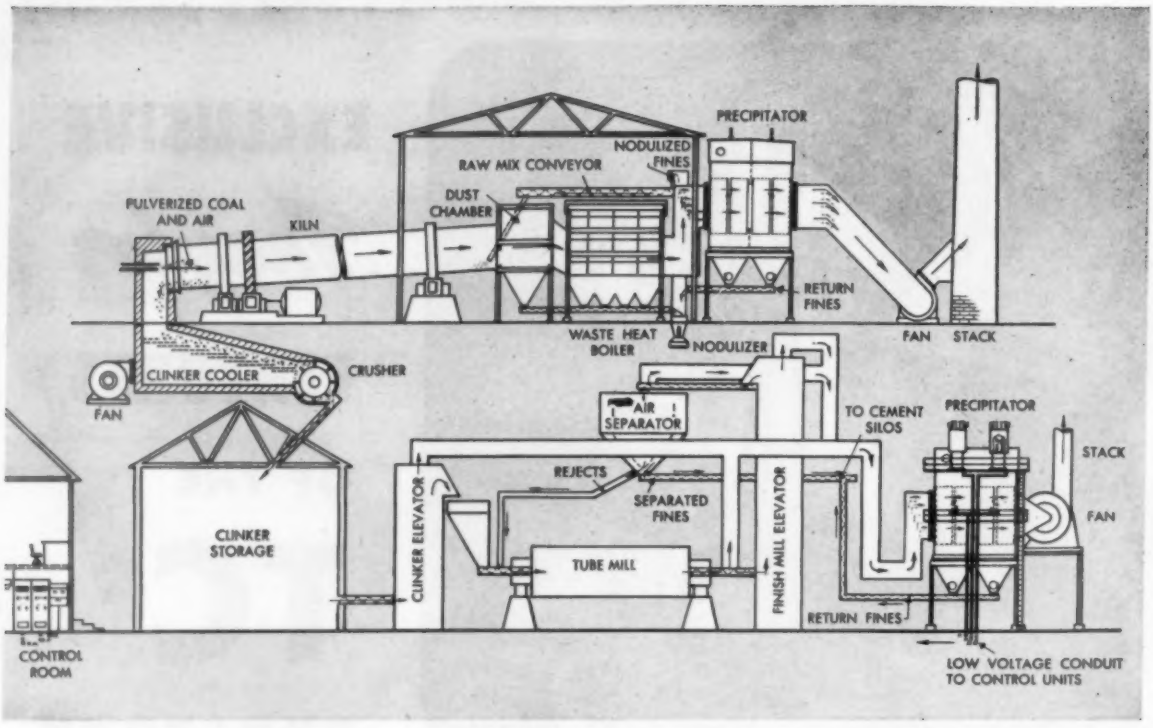

How dust collecting problems are handled in the modern cement plant

The "why" of the Cottrell precipitator is well known to cement plant personnel—its use in nuisance abatement and cement dust salvage is well established. These diagrams explain the "how" of the Cottrell, including its familiar application to kiln gas and, more recently, its use in the ventilating system of the finishing mill.

Kiln Gas

The upper half of the drawing shows a Cottrell for cleaning kiln gases. They are first passed through a dust chamber to the waste heat boiler and from there to the electrical precipitator, where the dust is removed. Salvaged dust is returned by conveyor to the process. The cleaned gas is discharged to the atmosphere through an induced draft fan and the stack. (Wet process kilns may also be fitted with Cottrells).

And In The Finish Mill

Dust from the grinding mills has always been a major problem. The lower half of the diagram shows the recent application of the Cottrell for cleaning finish mill ventilating system gases. Cement dust is collected from the ventilating system serving the separators, conveyors and elevators. As before, recovered dust is returned to the process.

Separating Small From Large Particles

When large particles of low alkali content must be separated from very small particles of high alkali content, an integrated mechanical-electrical precipitator will do the job effectively. The mechanical element handles large particles, and the electrical element collects the smaller particles that escape it.

Rapping Puffs Eliminated

With Research-Cottrell's electronically controlled Magnetic Impulse Rappers, there is no need for rapping shutdown periods or dampers. Automatically controlled and operated, the MI Rappers continuously rap the electrodes throughout precipitator operation, thus avoiding dust re-entrainment in the gas stream and assuring optimum precipitator performance at all times.

Many Design Advances

The MI Rapper is one example of many improvements that have taken place in the design of precipitators and their associated electrical equipment. Forty years of experience have provided Research-Cottrell with a rich store of engineering skill—it is this skill that has evolved the modern Cottrell precipitator, embodying a design based on knowledge gained through more than 2000 precipitators in many different fields. Fourteen of these have been installed or are under construction for cement plants. All of these precipitators were custom-engineered to individual specifications.

For a more complete description of the Cottrell precipitator, write to Research-Cottrell for Bulletin GB.

RESEARCH-COTTRELL, INC.

A Wholly Owned Subsidiary Of Research Corporation

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Dependable way to keep crusher full

HOW ONE QUARRY OPERATOR DOES IT

"I can always keep the crusher going and the hopper full with that baby!"

This remark was made by Clair Hearn, job superintendent and shovel operator for the Greene Limestone Co., Greene, Iowa. "That baby" is a ¾-yd. Bucyrus-Erie 22-B shovel. Hearn knew what he was talking about because he had seen this 22-B load 1500 tons of stone per 10-hr. day into a portable crushing plant to keep a fleet of 6- to 8-yd. haul units on the move.

Bucyrus-Erie performance builds that kind of confidence. It begins with sound design that matches every machine component to the rated load. This means not only sustained high output, but much less time out for maintenance, and many years of added working life. Your operator works better, too, does more because controls are conveniently grouped, easy to operate.

See your Bucyrus-Erie distributor soon for excavators from ⅜- to 4-cu. yd.— and be sure of getting the most output for the lowest cost.

123E55

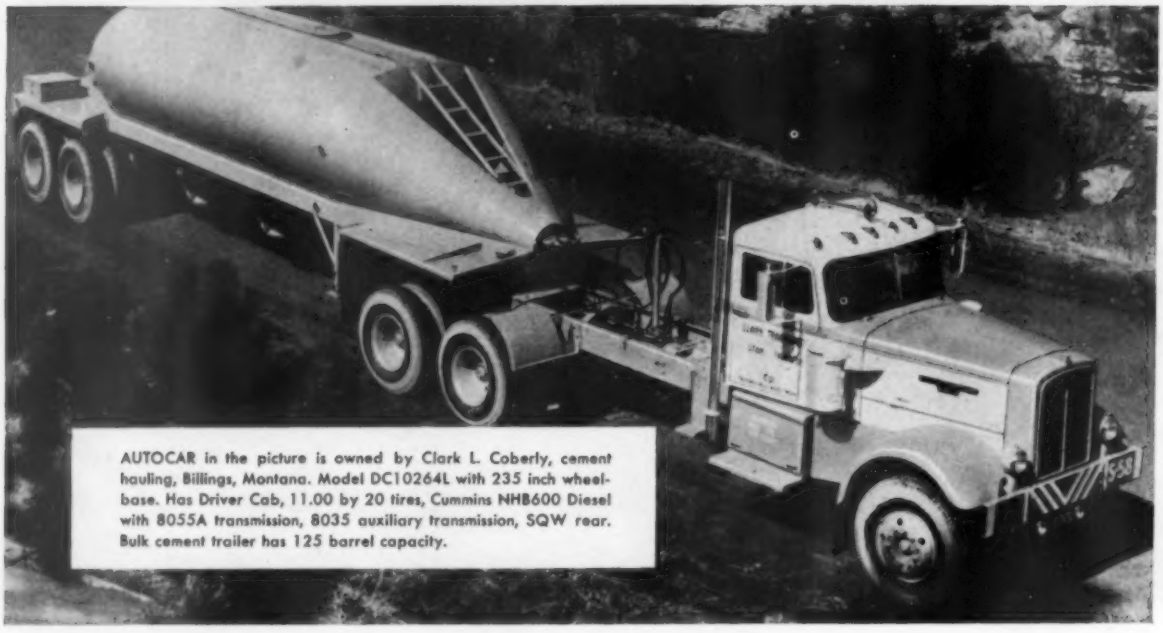
BUCYRUS ERIE
South Milwaukee Wisconsin

75 YEARS OF SERVICE to Men Who Shape the Earth

AUTOCAR

The BIG Name in BIG Trucks

for Building Materials



AUTOCAR in the picture is owned by Clark L. Coberly, cement hauling, Billings, Montana. Model DC10264L with 235 inch wheelbase. Has Driver Cab, 11.00 by 20 tires, Cummins NHB600 Diesel with 8055A transmission, 8035 auxiliary transmission, SQW rear. Bulk cement trailer has 125 barrel capacity.

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We'll be pleased to give you all the facts about Autocar for your business—demonstrate Autocar engineering to your exact needs for extra earning power. Call on your Autocar-White Representative or send coupon.

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Send me facts about the Autocar All-American Line for my business.

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24B

AUTOCAR is bigger and huskier than ever—engineered for the really big payloads.

That's why you hear so much about Autocar for the building materials and construction industries—for equipment hauling, dumps and mixers.

The exclusive construction features—like bolted construction, renewable bushings, the famous Autocar driver cab and many more—make the new Autocar All-American Line the right choice for your big jobs, your big payloads.

Solve your big hauling problems now and for years to come. Call on Autocar!

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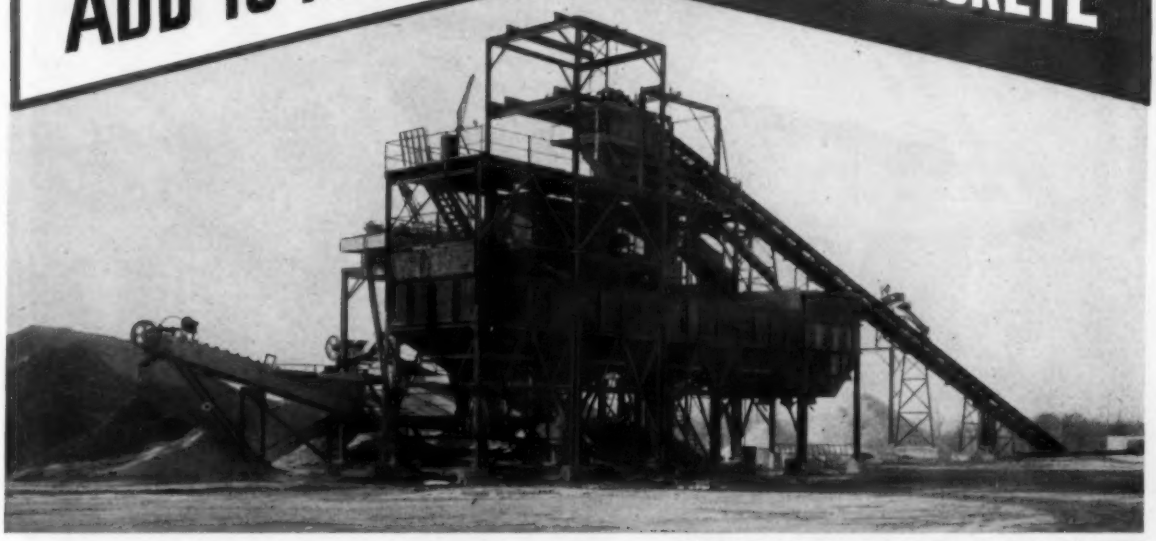
"EVERY SCREEN WE ADD IS A SECO"

SAYS LUDWIG KAHLE OF PINE HILL CONCRETE



Well Known Operator Chooses 9 SECO'S To Handle Output At Three Modern Plants

"Why do we turn to SECO every time we add new screens in any one of our three big plants? I would say it boils down to just one thing . . . performance!

We average a million tons a year of material for our ready-mix concrete requirements. We have put SECO screens through tough peak season operation year after year . . . and they never say die. We have one SECO screen that has been on-the-job for 18 years. They're smooth operators, and as for accurate sizing, in my book they're the best." Ludwig Kahle, President, Pine Hill Concrete Mix, Buffalo, New York.

P.S. from your Seco on-the-Job reporter.

Send for SECO Catalog #204 today!

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

Screen Equipment Co., Inc.

Buffalo 25, New York

Overall view of one of Pine Hill's Concrete Mix Plants.

Section of Genesee St. plant showing a single deck 3' x 10' SECO scalper, one of nine SECO's serving this company.

Just one of many Gar Wood 75B advantages in rock!

Rock output jumps when you put a 75B in the quarry. One big reason is Gar Wood's positive, independent chain crowd that gets maximum engine power into each load. Dipper retract is twice as fast as crowd speed. Since crowd mechanism is built in, conversion is fast and easy . . . nothing to remove except crowd chain! And here are other big 75B advantages for work in rock . . .

Independent travel while swinging gives you extra mobility to speed loading. You can swing or hoist while you're moving up.

Fluid coupling that absorbs shocks is available on the 75B. It forms a cushion to prevent damaging shock loads from reaching vital machinery. Permits smooth acceleration that increases production, reduces wear and tear on machine.

Power steering for fast, easy operation. Easy to turn and maneuver regardless of quarry floor conditions.

Rugged design reduces maintenance. Massive crawler base takes extreme shock and strain . . . heavy-duty conical hook double rollers eliminate pin strain and rocking under load.

These and many other 75B advantages reflect Gar Wood's long experience in designing and building the finest ¾ yard machines on the market. Get the complete story from your Gar Wood distributor, or write direct to Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

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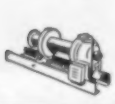
Wayne, Michigan • Findlay, Ohio

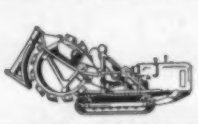
Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.

Gar Wood-St. Paul Hoists & Bodies


Gar Wood Winches

Gar Wood Tractor Equipment

Gar Wood-Buckeye Spreaders

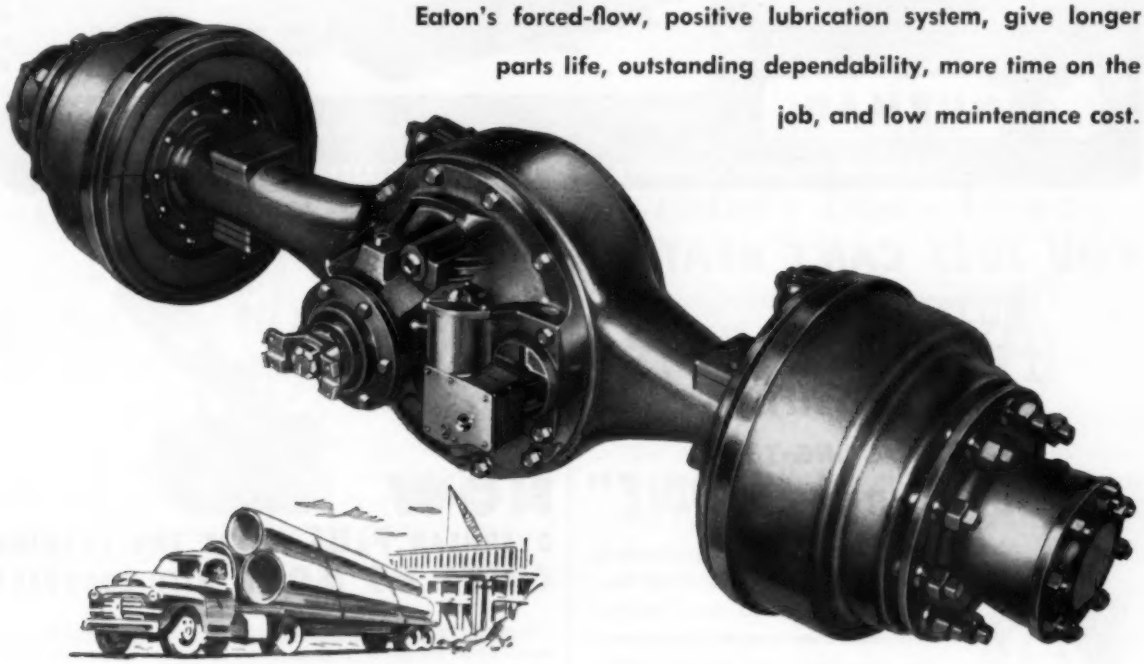

Gar Wood-Buckeye Ditchers

GarWood

EATON 2-SPEED AXLES

Keep Trucks on the Job!

The extra stamina built into the Eaton 2-Speed Axle prevents harmful distortion or misalignment under excessive loads. Practical, down-to-earth design makes maintenance quick, easy, and economical. Eaton's exclusive planetary gearing distributes pressure and wear over four husky planetary gears. These extra-quality construction features, plus Eaton's forced-flow, positive lubrication system, give longer parts life, outstanding dependability, more time on the job, and low maintenance cost.



More than Two Million Eaton Axles in Trucks Today!

For complete information, see your truck dealer.

EATON — *AXLE DIVISION* — **MANUFACTURING COMPANY**

CLEVELAND, OHIO

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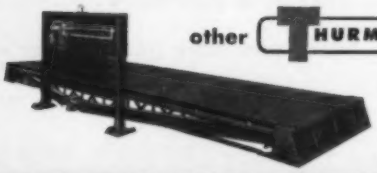
SAVE on EXPENSIVE Pit Costs!

THURMAN portable scales . . . . .
Need NO concrete pits!

Move easily from job to job! Set-up in minutes

Thurman *Portable* Truck Scales perform best in the field year after year. They're engineered to move rapidly from job to job on a moment's notice. No concrete pits are ever needed. Set on any flat level ground, ramp the earth on each end and roll trucks on. Thurman *Portables* are made for a lifetime of accuracy under rugged field conditions. Capacities: 20 to 50 ton Deck Lengths: 18 to 43 ft. Write today for bulletin 601.

EASY TO INSTALL AS A PERMANENT PITLESS SCALE saves on expensive pit cost



other THURMAN scales

Batching Scales	Pit Scales
Liquid Weighing Scales	Warehouse Scales
Portable Truck Scales	Wheelbarrow Scales
Industrial Scales	Electronic Scales

THURMAN

Precision Products since 1918

THURMAN MACHINE COMPANY, DEPT. D, 156 N. 5th STREET, COLUMBUS, OHIO

YOU JUST CAN'T BEAT

AUTO-VORTEX Trade Mark Reg. CLASSIFIERS

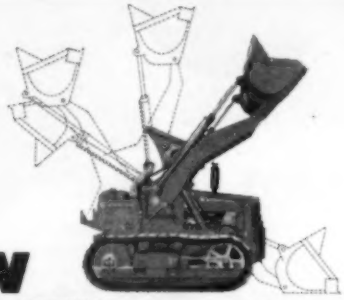
FOR LICKING THAT

"BULGE in the MIDDLE"

Word gets around . . . particularly when satisfied customers are your best salesmen. In 1955 more satisfied customers than ever before learned by experience that AUTO-VORTEX CLASSIFIERS were the sure-fire, economical answer to recovery of fines, sharper splits, and elimination of the "Bulge in the Middle!"

We're specialists in Classifiers. Our services and equipment can be your answer to classification and sand gradation problems. Why not call or write us today!

CHARLES E. WOOD COMPANY
906 NORTH WATER ST. • MILWAUKEE 2, WISCONSIN



NOW

OVERHEAD PLUS FRONT END LOADING COSTS NO MORE WITH LODOVER!

This versatile combination overhead and front-end loader costs no more than conventional front-end loaders . . . yet loads more dirt, faster with your International T-9 or TD-9 than any other loader on the market today!

ONLY LODOVER GIVES YOU

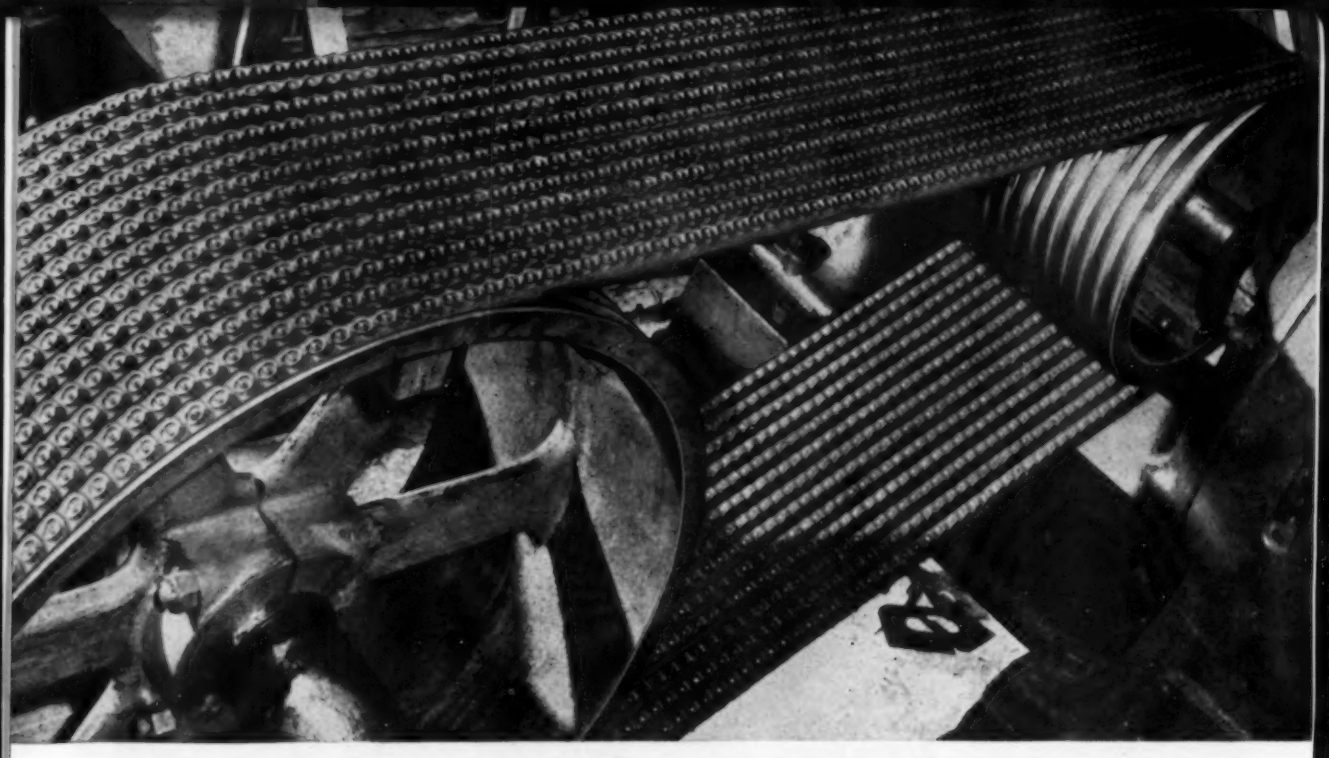
50% MORE YARDAGE—no-turn overhead operation eliminates two turns every cycle, doubles yardage every hour

EXTRA DIGGING POWER—twenty-five degree bucket tilt-back at ground level pries out a full bucket every time

REDUCED TRACTOR MAINTENANCE • SAFE, EASY HYDRAULIC OPERATION • HIGH-SPEED FRONT-END LOADING

A complete line of job-tested attachments makes Lodover the most versatile multi-purpose unit you can buy to boost profits on your job. An on-the-job Lodover demonstration will convince you . . . arrange for one today!

SERVICE SUPPLY CORPORATION
20TH & ERIE AVENUE • PHILADELPHIA, PA.



New Veelos TD & TE Heavy-Drive Adjustable V-Belts Drive Maintenance and Inventory Costs Down!

1 New Veelos TD & TE V-Belts are stronger, more durable!

New stud, cup-washer, T-screw design afford extra strength at points of stress. Greater strength, maximum flexibility mean cooler, smoother running belts! If a belt is accidentally damaged—replace the damaged links—not the entire belt!

2 Patented Veelos TD & TE adjustable V-Belts are easier to change!

They practically eliminate "down-time"! Just uncouple the worn belt or links and put on the new belt or links.

No lengthy production stops! Veelos Adjustable V-Belts give trouble-free performance with a minimum of maintenance required!

3 Veelos belts assure complete inventory in minimum storage space!

Stock just two 100 ft. reels of Veelos TD & TE widths—you have a complete inventory ready to handle *any* D or E belt drives. Just reel off the length desired. And Veelos stores in inches! Save money on inventory, stockroom space, deterioration of unused belts!

VEELOS
THE BALANCED
LINK V-BELT

Veelos is known as Veelink outside U.S.A.

Get your free Veelos Data Book; many pages of important information on belt drives. Write to:

MANHEIM
Manufacturing & Belting Company
312 Stiegel St., Manheim, Pa.

"Industrial Belt Specialists Since 1911"

© M.M.& B. Co. 1956

Adjustable to any length • Adaptable to any drive • Balanced power • Constant power • Vibrationless power

Withstands far greater

SHOCK LOADS

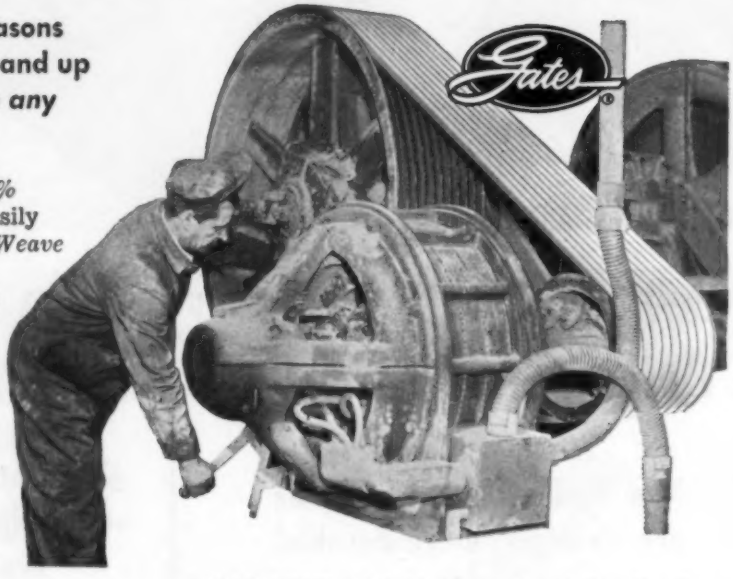
than any standard V-belt

Here are the interesting reasons why Gates Super Vulco Ropes stand up months, even years longer than *any* standard V-belts...

1. *Super-Strength Cords* provide 40% greater horsepower capacity . . . easily absorb heavy shock loads. **2.** *Flex-Weave Cover* (U.S. Pat. No. 2519590) provides greater flexibility with far less stress on the fabric. Cover wears longer — increases belt life, lowers belt costs.

3. *Concave Sidewalls* (U.S. Pat. No. 1813698) provides sure pulling power, longer wear because sides straighten out as belt bends— make even contact with sheave walls.

Straight-sided belts bulge out when bent around sheave. Uneven contact causes uneven wear.



SHOCK LOAD of this big jaw crusher at Canadian Quarries, Ltd. is absorbed by Gates Super Vulco Rope Drive. Wherever shock load is severe, Gates Super Vulco Ropes cushion the shock—keep machinery replacement cost down

3 other outstanding advantages

Resists Oil, Heat and Weather: Long life is assured even in the presence of excessive oil . . . even under prolonged exposure to heat and weather.

Provides Static Safety: The high electrical conductivity of Gates Super Vulco Rope provides safer drives in explosive atmosphere.

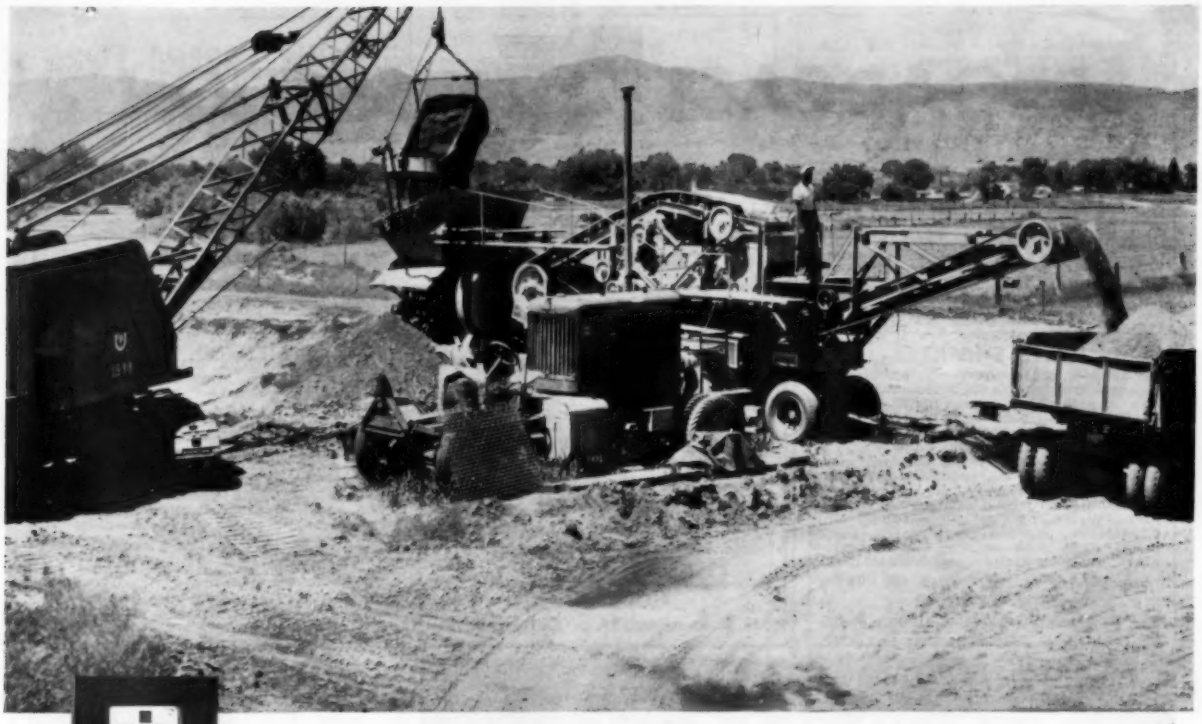
Saves Space: Higher horsepower rating and greater resiliency may permit fewer belts, or smaller sheaves where space saving is vitally important.

The Gates Rubber Co., Denver, Colorado
World's Largest Maker of V-Belts

Gates SUPER Vulco Rope

The V-Belt with 40% more horsepower capacity

TPA 57



International diesel power units provide dependable, low-cost power for shovels, crushers, etc. Here, McMillan Constr. Co., Denver, uses 115 hp IH diesel to power 1¼-yard dragline . . . 190 hp IH diesel on 200-ton-per-hour crusher.

only INTERNATIONAL builds all these major advantages into diesel engines

1. Full-flow lube oil filters lengthen engine life

New replaceable plastic impregnated full-flow filters increase engine life by removing all harmful particles from the oil before it goes under full pressure to engine bearings. Exceptionally large filter area extends filter change period to 500 hours under normal conditions.

2. New injection pump reduces maintenance

Time proven International single and twin plunger pumps have been further simplified for longer life and lower cost maintenance. Scavenging gears and pump air pipe are eliminated . . . hardness of injection plunger increased for up to four times longer life.

3. Drilled passages assure full-time lubrication

You can be sure *all* engine bearings will be lubricated at *all* times. Lube oil is pressure-pumped through internal rifle-drilled passages that can't rupture or work loose.

4. Clean combustion on low-cost fuel

Trouble-free single orifice injection nozzles, and pre-combustion chambers mounted at 45° angle thoroughly mix fuel and air under all load and speed conditions. You get follow-through power strokes, clear exhaust, smooth idling on low-cost No. 2 fuel.

5. Fast, sure starting . . . always

Never mind cold—IH diesels work year 'round, even in the Arctic. Seconds-fast, they start in any weather on gasoline . . . and, seconds-fast, you switch to clean-burning, full-diesel power.

Six sizes of diesels, 52 to 190 hp, complete with radiator and fan. Also 12 models, 16½ to 200 hp, for gasoline, natural gas or LPG. See your nearest International Distributor for details.

INTERNATIONAL INDUSTRIAL POWER

BROADCAST P&Q SECTION

PIT AND QUARRY • 431 S. DEARBORN ST. • CHICAGO 5, ILL.

ADVERTISING RATE PER ISSUE: $9 A COLUMN INCH. LOWER RATES FOR LARGER SPACE USED AND/OR ON A CONTRACT BASIS. WRITE FOR RATE CARD.

CLOSING DATE: 20th OF THE MONTH PRECEDING DATE OF PUBLICATION.

SALES ENGINEER

Leading manufacturer of machinery located in Milwaukee, Wisconsin area has opening for Sales Engineer, 30 to 40 years of age, who has had several years experience in sales of heavy machinery. Must have degree in mechanical or mining engineering. This represents an exceptionally fine opportunity which should lead to administrative responsibilities for right man. Write, stating age, education, experience, present employment, personal data and salary expected to start. Replies strictly confidential.

Box PQ-101 c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

MAINTENANCE SUPERINTENDENT

Must be familiar with diesel engines, shovels, tractors, crushing and screening equipment, etc. To head maintenance program of Stone Quarrying and Crushing operation. Location: Mid-East. Salary plus Bonus. Please state salary required, experience, when available. First reply.

Box PQ-112 c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

PROJECT ENGINEER WANTED

Graduate Mining, Metallurgical, Chemical or Mechanical Engineer, preferably 25 to 35 years old, wanted by medium size progressive heavy machinery manufacturing company located in Southeastern Pennsylvania. To assist in design and preparing for market of various lines of equipment used in mineral dressing, heavy chemical, cement and rock products industries. Must have had engineering and field experience, and be willing to work on drafting board, travel and do field service. Opportunity also exists for a properly qualified individual, eventually to become a sales engineer. Salary open.

BOX PQ-904, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

Professional Services

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer

75 Second St.
Newburgh, N. Y.
Phone: 1828

9 South Clinton St.
Chicago 6, Ill.
Ph. FR 2-4186

Operation
Plant Layout
Design
Construction
Appraisals

WANTED

Superintendent for a small quarry and crushing operation who is familiar with power shovel, drilling, and quarrying equipment. Must be capable of taking charge of stone quarrying and crushing operations. Should have some engineering and general supervision ability. Location: in south eastern state. Please advise experience and salary expected.

BOX PQ-202, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOUNDATION TESTING, CHEMICAL ANALYSIS

CORE DRILLING

Thomasville Drilling & Testing Co.
THOMASVILLE, PENNA.

GEOLOGIC ASSOCIATES
Engineering Geologists
Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling
1508 8th Ave. So. Nashville, Tenn.
9-1519 Phone 5-4402

LEO. H. TIMMINS, P.Eng.
MINING ENGINEER
Examinations - Reports
Financing of Prospects
Suite 700 1590 Sherbrooke W. Montreal
Phone Glenview 2876

JOHN F. MEISSNER ENGINEERS INC.
CONSULTING & DESIGNING ENGINEERS BULK MATERIALS HANDLING
SPECIALISTS IN DESIGN OF CRUSHED STONE, SAND, GRAVEL AND READY MIX PLANTS
308 W. WASHINGTON • CHICAGO 6, ILL.

GEOLOGIC ASSOCIATES (FIELD DIVISION)
Specialists In Subsurface Exploration
Core Drilling and Soil Sampling
Grouting and Remedial Work
1508 8th Ave., So. Nashville, Tenn.
Phone 5-4402

EXECUTIVE AVAILABLE

Qualified to manage all phases of operation in sand and gravel crushed stone, and ready mix concrete industries. Now managing aggregate production of 2,000,000 tons annually. Available for interview at National Convention, Chicago, Ill. February 13-16.

Box PQ-204, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St., Chicago 5, Ill.

PRECISION CHEMICAL ANALYSIS OF RARE AND COMMON MINERALS, ORES AND CONCENTRATES. CARBONATE, PHOSPHATE AND SILICATE ROCKS.

H. J. HALLOWELL
Consulting Chemist
R.D. 2 Ridgefield, Conn.

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

HELP WANTED

Superintendent for limestone operation in mid-western state doing 150,000 tons annually. Must have knowledge of quarry operation, crushing, pulverizing, screening, drying and packaging. State qualifications and salary expected.

Box PQ-205, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

DESIGNED TO INCREASE YOUR CLIENTELE

PIT and QUARRY'S new classified section for professional men. *Write today for rates.*

ASS'T QUARRY SUPT.

QUARRY ENGINEERS

Leading producer of sand and gravel in Chicago area needs experienced men to assist superintendents of large volume quarry operation, leading to top responsibility in near future. Some engineering or equivalent, and actual responsibility for production and supervision preferred. Opportunity for promotion, good salary, retirement income, insurance plans, and bright future. Reply, giving personal and work history and salary requirements.

BOX PQ-3015, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

SUPERINTENDENT for Medium size Central Ohio Quarry and Crushing plant. Must have ability to handle men, maintain and supervise entire operation. State qualifications, references and salary expected in your first letter.

BOX PQ-103 c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

BUCYRUS-ERIE DRAGLINE model 5W 8 yd. bucket, with 200' boom.

WILLIAM LUBRECHT, III
Construction Equipment
311 W. Diamond Ave., Hazleton, Pa.
Phone - Gladstone 5-4041 or 5-0253

FOR SALE

GARDNER DENVER WAGON DRILLS 4 Model D99D15 S/N 176658, 176726, 176730, 181076—$1,250.00 each.
1 Model D89 S/N 837—$750.00

ANDERSON EQUIPMENT CO., INC.
200 Merchants Nat. Bldg. Omaha 8, Nebr.
Phone Harney 2533

FOR SALE

TRANSIT MIXERS

Jaeger	8 Yd.	Hi-Discharge, Serial No 3HM-J8900, un-mounted, reconditioned.
Jaeger	8 Yd.	Hi-Discharge, Serial No. 3HCS-J4680, mounted on Rex Tandem Truck.
Jaeger	8 Yd.	Hi-Discharge, mounted Int. "K-11" 6x6, Very Clean, (2).
Jaeger	8 Yd.	Hi-Discharge, mounted Int. L170 Tandem
Smith	8 Yd.	Hi-Discharge, Serial No. 5033T, mounted on Diamond T. Tandem Axle Truck.
Smith	8 Yd.	Hi-Discharge, mounted Ford Tandem.
Smith	8 Yd.	Hi-Discharge, mounted Int. "L170 Tandem (2).
Rex	8 Yd.	Hi-Discharge, Serial No. TD-1651, Continental power, un-mounted.

MISCELLANEOUS

Gallon	"116"	Used Diesel Motor Grader.
Pettibone	"10"	Used 1-Yd. Tractor-Shovel, 4-wheel drive, Torque Converter.
Pettibone	"15"	Used 1½ Yd. Tractor-Shovel, 4-wheel drive, Torque Converter.
Unit		Shovel Attachment complete for Unit "514".
Unit	"514"	Used ½ Yd. Trench Hoe or Dragline, gas power.
Insley	"K-12"	½ Yd. Trench Hoe or Dragline, gas power.
Barber-Green	"522"	Bucket Loader, pneumatic-tired.

Note: Above equipment belongs to us.

EIGHMY EQUIPMENT COMPANY
120 S. Pierpont
Rockford, Illinois Phone 4-6706

FOR SALE

Rotary Drill Supplies in Stock at Columbus, Ohio

Subs, Spiral Reamers, Drill Pipe and Rotary Bits.

THE WHITE-ORR COMPANY
766 Northwest Blvd.
Columbus 8, Ohio

CYLINDER HEAD REBUILDING SERVICE

CRACKS REPAIRED
MACHINED READY-TO-INSTALL
VALVE GRINDING PRESSURE
& MAGNETIC TESTED

CATERPILLAR BUDA G.M.C.
INTERNATIONAL, ETC.
Gas & Diesel

CHAPIN CYLINDER HEAD CO.
PHONE # 3
9 Miles West of Jacksonville in CHAPIN, ILL.

FOR SALE

Bucyrus Erie 27-T Blast Hole Drill, excellent condition. Actually used 18 months. Complete with tools. Price $8,500.00

American ACS-4 Hammermill and extra set of replaceable tip hammers. This is a large, heavy duty mill in very good condition. Feed opening 43" x 16½". Price $4,000.00

Webster Enclosed Vertical Bucket Elevator, 65' centers. Buckets 6" x 7" x 9½" wide on heavy duty 6 ply 12" wide belt, complete with 7.5 H.P. Gear Head Motor drive and backstop. Price $4,500.00

FAYETTE LIMESTONE CO., INC.
P. O. Box 32,
WASHINGTON C.H., OHIO

WANTED

1 Symons 4' Short Head Crusher

1 Symons 5½' Standard Crusher

1 Heavy Duty 4 x 10 3 Deck Screen

John P. Condon Corporation
105 Coolidge Hill Rd.
Watertown 72, Mass.

WANTED

KILN OR COOLER

8'x80'

OR LARGER

Producers Supply & Engineering Co.
4200 S. Lawndale Avenue
Lyons, Ill. Phone: Lyons 3-4526

EQUIPMENT LOCATED
GA. - N.Y. - CALIF. - OHIO - TEXAS - ILL.

GRINDING MILLS

BALL MILLS—5x7, 5x10, 6x7, 6x8, 6x9, 6x10, 6x12, 7x7, 7x8, 7x9, 8x8, 8x14 & 8'x18'. Also 6'x8'.
HARDINGE—10"x48", 5"x40", 5"x22", 5"x18", 6"x36".
ROD MILLS—3x10, 4x7, 4x14, 5x10, 5x14, 6x12 & 8'x12'. Also 5'x18'.
2—Denver 30"x54".
TUBE MILLS—3'x12', 5'6"x22', 5'x18' & 6'x22'.

HAMMERMILLS

13—Jeffrey 30x24, 36x26, 30x36, 36x48, 42x36 & 42x45.
WILLIAMS GA30—24x30 & GA60—24x60.
DIXIE 5040—MOGUL 50x40 & 30x30.
GRUENDLER 8X10—42x30 & 1—GAA—30"x30".
2—PENNA. 8XE—100 TPH.
UNIVERSAL No. 4—36x36.
PENNA. THOR 8XT 15-48. Size 48x54.

APRON FEEDER

3—8'x8', 8'x12' & 54"x16'2".

AIR SEPARATORS

5 Sturtevant 10', 14' & 16'.
4 Gayco 5', 6' & 5'.
1—12 D Reco Clone.

FILTERS, SEPARATORS—CLASSIFIERS

11'6"x18', 14'x18' & 8'x10' Oliver Drum Filters.
5'x20' Dorr DSD Duplex Classifier.
6'x14' HARDINGE COUNTER CURRENT.
DINGS MAGNETIC TYPE 1R 3 STAGE 60".
THICKENER. ALSO 8 DORR A 20'x10'.
HARK & SCOVILL CLASSIFIERS, 2x15 SSFB, 6x22 DSF DORR 3x24', 10"x10" TURRENT BOWL 36"x19'3" Wemco Spiral Classifier.
16—5'x25', 6'x24' & 5'x20' Hake Classifiers.
9—Turrett Bowl Classifiers 3'x24'10"x10', 5'x24'x12', 4'6"x26'x16', & 6'x21'x24'.
12—Thickeners Dia. 100', 90', 80', 24', 16', 12'.
3—Hydro Separators 60"x45' & 20'x8'.
3—Wemco 10' x 30' Sand Launders.

ROTARY DRYERS & KILNS

ROTARY KILNS: 4'x28', 6'x28', 6'x3'x80', 9'x125', 3—9'x80', 4'x30', 6'x8', 6'x7'x80' 8'x125', 3—7'x110'.
ROTARY DRYERS: 3'x20', 4'x20', 4'x40', 5'x35' 6'x40', 6'x80', 11'x75', 4'x20', & 90"x80'.

JAW CRUSHERS

BLAKE TYPE—60x24, 40x48, 42x45, 42x60, 24x36, 18x36, 15x30, 13x30, 12x24, 12x16, 10x20, 30x42.
SINGLE SHAFT—18x36, 15x36, 15x30, 10x48, 10x30, 10x20.
CAM & ROLLER—24x40, 14x36, 11x26, 10x20, 8x10.

GYRATORY FINE REDUCTION CRUSHERS

NEWHOUSE 7", 10", 14"—KENNEDY 198, 258, 37—SUP. McC 6" & 10" AL. CHAL. 222B, TRAYLOR TY 36".

GYRATORY STD. PRIMARY CRUSHERS

6", 10", 14", 16", 20" & 36" SUP. McC.—GATES AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12K.
PARTS FOR 42" SUPERIOR McCULLY.

37 VIBRATING SCREENS

NIAGARA AC—ROBINS—LINK BELT—2x5, 2x8, 3x8, 3x10, 4x5, 4x8, 4x10, 4x14, 4x16, 5x8, 5x10 & 5x14, 1-3-3 & 4 Decks.

LOCOMOTIVES

9—16 Ton & 10 Ton Plymouth Diesels.
1—65 Ton & 5—45 Ton G.E. Diesel Elec.
10 TON DAVENPORT & 25 Ton Plymouth Gas.
3—14 Ton Brookville Diesels. Also 10 Ton Diesel.
8—PLYMOUTH GAS. 6 - 8 - 10 TON.
23—BATTERY & THOLLEY, 4, 6, 8, 10 TON.

LOCOMOTIVE CRANES

30 TON OHIO STEAM, 50 FT. BOOM.
25 TON AMER.—30 TON OHIO DIESELS.

MERRICK WEIGHTOMETERS

7—42 In., 30 In., 24 In., 18 In.

STEEL DERRICKS

GUY: 8 TON 85 FT. BOOM, 25 TON 60 FT. BOOM, 15 TON 100 FT. BOOM, 20 TON 110 FT. BOOM, 50 TON 100 FT. BOOM.
STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 135 FT. BOOM. 1—5 TON 100 FT. BOOM.

ASPHALT & OIL TANKS

15—8,000, 10,000 & 20,000 GAL. CAP. WITH COILS. 9—10,000 GAL. R.R. CAR TANKS.

RAILWAY CARS

177—DUMP STD. GA.—20, 16, 12, 8 & 4 YD.
36—FLATS—10 TON, 40 TON, 50 TON CAP.
44—TANK CARS—8,000 & 10,000 GAL. CAP.
75—V Dump Cars, 1¼ & 3 Yd.

R. R. CAR DUMPER

150 TON CAP. STD. GA. CAR DUMPER.

AIR COMPRESSORS—ELECTRIC

198, 420 & 676 WORTHINGTON BELTED.
1302 CFM & 1574 CFM INGER. RAND PRE-2.
1170 CFM GARDNER DENVER HAE1034-2500 V.
1578 & 2200 CFM—OCE—CHGO. PNEU. ELEC.
3078, 3364 & 5040 CFM Inger. Rand.

HYDRATORS

CLYDE HYDRATOR WITH KUNTZ CONTINUOUS DUSTLESS SYSTEM. 4-5 T.P.H.

42" CONVEYOR EQUIPMENT

42"x58' Stacker Conveyor.
8—Conveyors, 42", 800' to 900'.

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

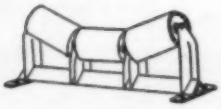
MOTORS · GENERATORS
TRANSFORMERS
NEW · REBUILT
WORLD'S LARGEST INVENTORY
ELECTRIC EQUIPMENT CO.
PHONE STATION COLLECT GL 6783
P.O. BOX 51 ROCHESTER 1, NEW YORK

BONDED

equipment is superior for

- *crushing...*
- *screening...*
- *conveying...*

BONDED® Ball Bearing TROUGHING IDLERS AND RETURN ROLLS



Rolls are 5" diameter steel tubing with quality ball bearings. They are balanced for easy starting in cold weather. Shafts are ¾" in diameter, and run completely through each roll. Furnished with easily replaceable pre-lubricated Sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings Maintenance is negligible.

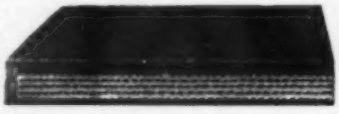
3-roll, 5" diameter Troughing Idler for:

14" belt	$17.25	24" belt	$19.75
16" belt	18.00	30" belt	20.50
18" belt	19.00	36" belt	21.25
20" belt	19.25	48" belt	23.75

1-roll, 5" diameter Return Rolls for:

14" belt	$ 6.75	24" belt	$ 8.00
16" belt	7.00	30" belt	8.75
18" belt	7.50	36" belt	9.25
20" belt	7.75	48" belt	10.75

BONDED Rubber Conveyor Belting

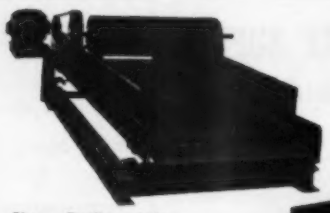


A fine grade of belting for troughing or picking idler conveyors and bucket elevators. Used in mines and quarries. For coal, crushed stone, sand, gravel, earth, clay products, chemicals and other bulk materials both wet and dry. Heavy duty 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting, having high tensile strength, tough cotton duck, strong carcass and proper flexibility. Also available with varying thicknesses of top and bottom covers in from 4 to 8 plies, and widths to 60". BONDEDS low belting prices save you up to 25%. Write for free sample.

Width	List Price	Sale Price
14"	$3.43 foot	$2.75 foot
16"	3.86 foot	2.88 foot
18"	4.27 foot	3.19 foot
20"	4.69 foot	3.69 foot
24"	5.55 foot	4.14 foot
30"	6.77 foot	5.06 foot
36"	8.01 foot	6.00 foot

BONDED® Reciprocating Plate Feeders

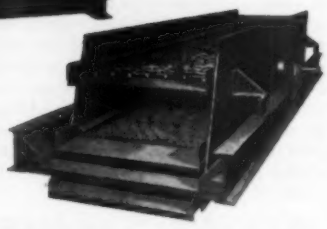
Bonded heavy duty feeders are economical and efficient for controlling feed to crushers, screens, conveyors, mills and other processing machinery. Excellent for handling high tonnage of coal, sand, gravel, metallic ores, crushed stone, aggregate and almost any other bulk material. Sizes for every need. Capacities to 225 tons per hour. Priced from $280.00.



BONDED® General and Heavy Duty Vibrating Screens

Size	Decks	Price
General Duty		Models
2' x 4'	1	$ 355.00
3' x 6'	1	495.00
3' x 8'	1	575.00
Heavy Duty		Models
3' x 8'	2	1165.00
3' x 8'	3	1250.00
4' x 8'	2	1695.00
4' x 10'	3	2095.00
4' x 12'	3	2395.00

Write for bulletins 1066 and 1067



Best for all minerals, chemicals, foods or industrial products. Improves sizing, grading and cleaning or separates solids from liquids. Screening areas range from 2' x 4' to 5' x 14', and with 1 to 5 decks giving 2 to 6 accurate separations. Bonded screens perform with maximum efficiency whether for heavy scalping of high tonnages, large capacities for multiple sizing, dedusting or dewatering. Economical operation and low maintenance. Models from $355.00.

BONDED CARRIES LARGE STOCKS OF SCREEN CLOTH FOR IMMEDIATE SHIPMENT

BONDED® Troughing Idler Conveyors

Ideal for either surface or underground operation, and can be supplied in any length or belt width desired. Bonded furnishes complete conveyors or Ready-Fab pre-fabricated sections, full range of idlers, belting or accessories to make your own conveyor. Conveyors are equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley mounted on 2¼" or 2-7/16" diameter shaft. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. Ready-Fab sections are quickly assembled on the job.

Belt Width	Conveyor Length	Price	Conveyor Length	Price
14"	25'	$ 672.00	50'	$1064.00
16"	20'	592.00	45'	1012.00
18"	30'	825.00	55'	1257.00
18"	85'	1798.00	100'	2065.00
20"	35'	960.00	60'	1429.00
24"	40'	1139.00	70'	1744.00
24"	100'	2339.00	130'	2995.00
30"	45'	1375.00	90'	2432.00

For conveyors shorter or longer than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt.....$15.66 per ft.
For 16" belt.....$16.78 per ft.
For 18" belt.....$17.20 per ft.
For 20" belt.....$18.95 per ft.
For 24" belt.....$20.26 per ft.
For 30" belt.....$23.02 per ft.

Complete details in Bulletin #1138. Write for it.

BONDED® Flight Conveyors

Heavy Duty Flight Conveyor

These rugged conveyors are built to move gravel, cinders, slag, broken rock, coal, wood products and other bulk materials at angles up to 45 degrees. They are fast efficient and economical. Made of welded structural and sheet steel with heavy duty double guided chain, in portable and stationary models. Flight sizes up to 8" x 24". Any length. Priced from $421.00.

BONDED® Cinder, Stone, Pumice, Perlite Crushers

Bonded double roll crushers for accurate, high capacity sizing of lightweight aggregate, pumice, perlite, phosphate rock, chemicals, limestone chips, fertilizers, some stone and many more natural and manufactured products. Available with Smooth, Fine or Coarse Corrugated rolls or any combination of same. Also made with Tooth Rolls. Capacities to 500 tons per hour. Write for new eight page Bulletin 1119. Priced from $479.00

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Build your own conveyor or bucket elevator or for replacement parts on your present equipment.

Ready-Made Head, Tail and Intermediate Conveyor Sections
All Types Idlers, Return Rolls, Belting, Reducers and Motors in Stock

Holdback $90.00

Head & Tail $171.00

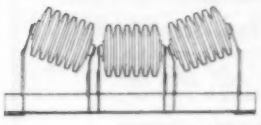
Roll Idler $6.38

Self-Aligning Idler $56.50

Guide Idler $13.75

Wing Pulley $74.00

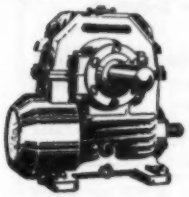
NEW BONDED RUBBER IMPACT IDLERS



Impact idlers used at the loading end or transfer points of troughing idler conveyors to absorb shock of heavy material falling on belt, thus reducing damage to belt. This cuts production costs and extends belt life. Rolls are made of a series of specially designed impact absorbing rubber discs mounted on steel tubing with easily replaceable sealed ball bearings. Also can be furnished with greasable type alemite fitted bearings. Interchangeable with Bonded standard idlers and other well known makes. Flat and return belt impact idlers available on application.

14" belt	**$58.00**	18" belt	**$80.00**	24" belt	**$100.00**	36" belt	**$130.00**
16" belt	**69.00**	20" belt	**90.00**	30" belt	**110.00**	48" belt	**172.00**

NEW BONDED GEAR REDUCERS



H.P. At 20:1 Ratio	H.P. At 30:1 Ratio	Price
3	2	**$ 81**
5	3	**142**
10	7½	**228**
15	10	**286**
20	15	**394**
25	20	**468**
30	25	**575**
40	30	**750**
60	50	**925**

Reducers are right angle with worm on bottom (underdriven) and all models are fan cooled by means of a radial fan. Reducer will operate in either direction. Other sizes and ratios available at bargain prices.

NEW BONDED GRAVITY TAKEUPS

Bonded Automatic, Vertical Gravity Takeups are complete, ready to be installed on your conveyor. They are recommended for the longer belt conveyors to properly maintain the required driving tension at the head pulley. They consist of mounting frame, two bend pulleys, main pulley, pipe guides & bearings. If used with Bonded standard 20" head pulley and 16" tail pulley, add 8' additional belting.

Priced From **$387.00**

BONDED STEEL ROLLER CHAIN

Bonded carries large stocks of steel roller chain from 1/2" to 1½" pitch for immediate shipment. Chains are single strand and are riveted or cottered. Used extensively on Conveyors, Elevators, Feeders and many other types of equipment.

Pitch	Type	Price
½"	Riveted	**$ .85** foot
⅝"	Cottered	**102** foot
¾"	Cottered	**1.60** foot
1"	Cottered	**2.45** foot
1¼"	Cottered	**3.55** foot
1½"	Cottered	**4.47** foot

NEW BONDED ELEVATOR BUCKETS

Buckets are made of Malleable Iron & Steel, in various sizes and shapes depending upon the material to be handled. They are designed to insure good pickup and complete discharge of material, give long and satisfactory service. Buckets have standard dimensions and can be punched for either belt or chain. They can be used as replacements or on new elevators. Special sizes made to order. Write for prices, delivery and Bulletin #1125.

Malleable Bucket

Steel Bucket

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1 EAGLE 7' x 20' LOG WASHER OF WELDED STEEL CONSTRUCTION COMPLETE WITH BOX TYPE LEGS, REPLACEABLE CORRUGATED NI-HARD SHOES, ANTI-FRICTION BEARINGS, CUT TOOTH STEEL GEARS, DUST RIGHT GEAR CASES, INTEGRAL MOTOR MOUNT 60 H.P. 1160/1200 R.P.M. 3/60/220-440 VOLT OPEN DRIP PROOF ELECTRIC MOTOR AND V-BELT DRIVE, SERIAL NUMBER 3203. BRAND NEW, PURCHASED JUNE 1955, NEVER USED. F.O.B. CARS OMAHA, NEBRASKA. LIST PRICE $11,700.00 *less* $1,000.00. Reason selling — SPECIFICATION CHANGED, WASHING NOT REQUIRED.

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COLUMBIA SILICA SAND COMPANY
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1—#9 Riddell Dry Pan Cinder Grinder, capacity 30 tons per hour.

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30 HP Erie City Boiler reinsure 200# WP
150 & 136 HP Self-contained Boilers
20x36" C/R Ball Bearing Jaw Crusher
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42" Gyratory Crusher

The National Lime & Stone Co.
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1 new F66 DT (Unsealed) Syntron Electric Vibrator feeder magnet, suspension mounting 220 volt—60 cycle.
1 new FC66 Syntron Electric Selenium rectifier type controller.
The lot for $2500.00.

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1—8" Manganese dredge Pump, V Pulley drive—A-1 Condition $1500.00
1—Link belt twenty-five foot (25') Dewatering Elevator. $1000.00

ANDERSEN SAND & GRAVEL CO.
1700 S. WEADOCK ST.
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3500 MANITOWOC ERECTION CRANE

Diesel—120' boom, 30' jib.
This machine just like new.

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2½ to 4 yard Sauerman Cableway Excavator, Mast and Hoist.

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LOCOMOTIVES: 2—ALCO 125 ton, 1000 H.P. McIntosh Seymour diesel with G.E. electric equipment. Sale or rent.

DRAG SCRAPER: Ingersoll Rand 50 H.P., 3 drum, 220/440 volt. Also, one 2 drum, 15 H.P.

SHOVELS & CRANES: Manitowoc 4500, 3900 and 3500, P & H 855, 2 yd. capacity shovel front and 90 ft. dragline boom. G.M. 671 diesel motor. Lorain 820 Dragline with 90 ft. boom, D13000 Caterpillar diesel. Lorain model TL20 with backhoe and crane boom. Bucyrus Erie 120-B electric, 4 yd. capacity, 2200 volt. A. C. Shovel Front for Bucyrus Erie 54-B, 2½ yd., NEW condition.

LOCOMOTIVE CRANE: 25 ton capacity, standard gauge, gasoline powered, cast steel trucks, air brakes, with or without 1¼ yd. Williams clam shell bucket, thoroughly modern, excellent condition. Located Minnesota. For sale or rent.

CARS: 10—Easton 10 ton capacity, standard gauge, side dump.

PUMPS: 10" Centrifugal, capacity 500 GPM @ 280 ft. head, 500 H.P. Also, one 3000 GPM, 280 ft. head, 300 H.P. Both 2200 volt.

PAN FEEDER: Heavy duty manganese 60" x 14 ft. with 20 H.P. motor, speed reducer and drive. NEW condition.

DRYER: 5 ft. x 30 ft. complete with all auxiliary equipment.

TUBE MILLS: Allis Chalmers 5 ft. x 22 ft. with steel heads.

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300 H.P., 435 RPM. 600 H.P., 710 RPM.
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1—20" Diesel Dredge, plain suction steel hull.
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2—6' x 74', ⅜" shell.
1—5' x 67', 5/16" shell.
1—5' x 40', ⅜" shell.
1—6' x 60', 5/16" shell.
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1—Allis Chalmers k-9 Gates Gyratory.
10—Jaw Crushers, 5" x 6" to 42" x 48".
2—Pennsylvania #SXR-100, 100 TPH.
3—Hardinge 4½' x 16", 6' x 22", 7' x 36" Ball Mills.
2—Patterson 6' x 8' Ball Mills.
1—Raymond #40 Imp.
1—Williams #20 H.O. Slugger Hammermill.
2—A.C. 6' x 22' Tube Mills, 300 HP motors.
1—Allis Chalmers #8722 Compeb Mill.

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6—Tyler Hummer Screen, 4' x 7'.
1—Link Belt 3' x 8' double deck Screen.
5—Rotex 40" x 84", 40" x 120".
4—Air Separators, 6', 8', 10', 14'.

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2—Chicago 14" x 7" Compressors, 434 cfm.
2—Oliver Rotary Dewaterers, 8' x 4'.
12—Bucket Elevators, 20' to 78' centers.
250 ft. Link Belt 12" Troughing Conveyor.
1—10,500 gpm Centrifugal Pump, 135' head.

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3 phase, 60 cycle, 220 or 440 volts (°2300 volts or higher)

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500	Westgh.	CW	350
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400	G. E.	IK-17	900
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250	°G. E.	I-17B	450
200	G. E.	IK-15B	900
200	G. E.	IM-17	600

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42" x 12' Air Tank ½" shell
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Apron Feeder 18" x 11'
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111-M Marion 3½ yd. diesel shovel
4161 Marion 5 yd. electric shovel. Worked about three years.
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111-M Marion Hi-Lift diesel shovel, 43' boom, 23' stick, 3 yd. dipper
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2400 Lima diesel dragline 130' boom, 5 yd. bucket
4500 Manitowoc diesel dragline 120' boom, 5 yd. bucket
B-E 120B Electric dragline 110' boom, 4 yd. bucket
4161 Marion dragline 110' boom, 5 yd. bucket
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Using low-cost, confidential geological research with study of pedological and subsurface data and often the interpretation of air photography, (all available for most U. S. areas) our geologists prospect in the office subject to field tests. Slow costly ground reconnaissance eliminated. ☆ An explanation of your needs written on your business letterhead with any map marked to indicate area in which deposits are wanted, brings complete information and proposal on suitable work for you. No obligation. Dept. PQ-2

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1200 Fifteenth Street N. W. WASHINGTON 5, D. C.

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One Marion Electric Shovel, Type 471, Serial 6776, new in 1936, 440 volt, 3 phase, 60 cycle, 75 H.P. Motor with Ward Leonard Control. Shovel replaced by larger machine due to increased output. Several good years left in shovel. Plenty of spare parts to go with machine, including 500 ft. of new Power Cable. Ideal for sand and gravel operation. Can be demonstrated.

CONTACT:
The Ruberoid Company
Hyde Park • Vermont

FOR SALE

One Used Tyler Hummer Electric Screen Type 38, 4' x 8', in very good condition, with one Model 218-C Type V-16 Power Converter 220 Volt, 60 Cycle, Serial No. 1822-12.

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Southern California's only lime rock deposit remaining independently owned, and capable of supporting large scale operation. Location near existing plants (125-miles Los Angeles), assures labor supply and zoning. Purchase inquiries invited—no promotions.

BOX PQ-201, c/o PIT AND QUARRY PUBLICATIONS
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Locomotive Cranes—For Sale

2—30T Brownhoist Diesels—1942
1—30T Browning Diesel—1943

Overhead Cranes—For Sale

1—10/5T 80' Span Milwaukee 230 DC
1—15T 56'11" Span P&H 230 DC
2—20T 38'5" Span P&H 440 AC
1—150T 75' Span, 2—75T Trolleys P&H 230 DC

Geo. M. Meriwether, Industrial Equipment
1712 7th Ave. No. Birmingham 4, Ala.

CRUSHERS: 1020AC, 1218 Acme, 1524 Univ. 1536 Diamond, 1838 AW, 2036 CR, 2436 Lippman, 3042 Buchanan JAW, 1'8" & 2'4" Traylor, 10, 16, 20, 30 & 36" McCully. 16B Telsmith GYR. 2, 3 & 4' CONE. 3018, 4022 DBL. ROLL.
MILLS: 4x7, 6'x22", 7'x22", 6x8, 6x12 Ball. 8x14 Rod. CR24, Univ. #3, Williams 4, 5 & 20.
CRUSHING PLANTS: 120 TPH Rogers, Pitmaster, Diamond 83, Pioneer 40V. CR 2 unit.
DRYERS: 4x20, 5x30, 5x40, 6x50, 7x110, 8x125 & 10x120.
CENTRIFUGE: 54x70" Bird solid bowl.
SHOVELS & DRAG: Koehring 301, 1005. Insley K12. 604, 802, 1201 Lima. Bucyrus 120B, 170B. NW 6, 25, 80D. 95. P&H 255, 855, 1055. Marion 40A, 92, 93M, 381, 450, 480, 490. Lorain 820.
20 & 45 ton std. ga. Diesel LOCOMOTIVES.
275 HP Cummins Diesel ENGINE. Others.
Equip here: 100 ton Bin, 2432" Ball Mill, Lorain TL20 Moto-Crane.
Repres: Bonded Scale and Machine Co.

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CRUSHER SHAFT—with bearing assembly for 1540 Champion Good Roads Crusher.

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10' x 200' x ¾" comb. chamber.
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50' c/c 8x5 buckets, complete.
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New, job-tested, high-grade butyl insulation assures better resistance to heat, water and compression. And new neoprene jacket makes this cable even tougher and more abrasion-resistant.

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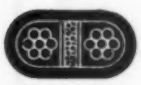

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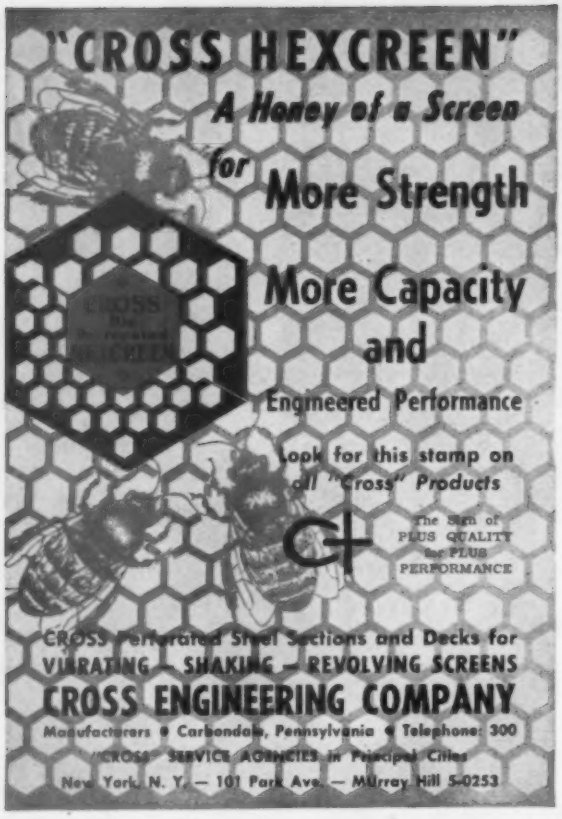
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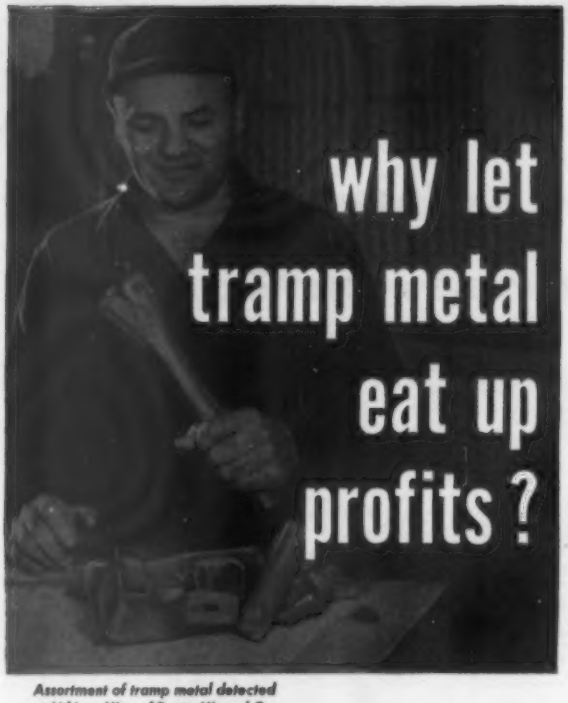

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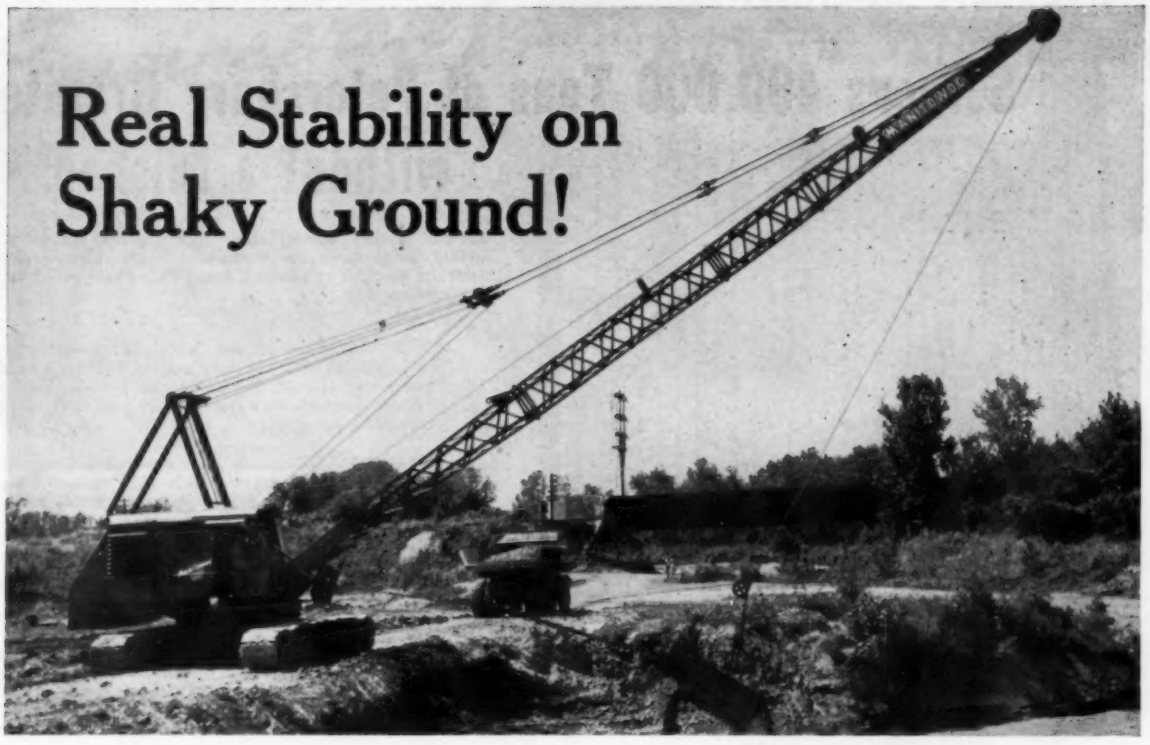
Real Stability on Shaky Ground!



Manitowoc Lower Works Design Provides Greater Stability on Treacherous River Bank

Arrow Sand and Gravel Company of Columbus, Ohio has the ticklish job of taking stone from an open pit near the Scioto River while working from the unsteady river bank. The job site is located directly across the river from the Columbus water filtration plant.

Because of the difficult footing, Arrow chose a Manitowoc dragline having the positive stability needed for full boom reach without imposing undue pressure upon the river bank during bucket return. Equipped with a 4-yd. bucket and an 80′ boom working at an 85′ radius, their Manitowoc 3900 dragline completely fills two 15-yd. trucks with stone in just five passes each.

Due to the Manitowoc's remarkable stability, the hook rollers never even touch the top flange of the ring gear during dragging and loading operations. These adjustable hook rollers at the rear almost double the effective diameter of the roller path by reducing roller loads. Machine stability is assured no matter what front end equipment might be used.

Other features contributing to the Manitowoc 3900's greater stability: 20′4″ long crawlers — spread wide — provide low ground pressure; a simple, alloy steel carbody totally enclosing travel shaft clutches and gears; and an extremely simple drive with dependable jaw type steering.

Clean, efficient design throughout means greater speed — more cycles per working day. The Manitowoc has only 14 gears and only working gears turn. This direct power flow gives top line pull and speed with fewer parts. Smooth, disc-type swing and travel clutches and air controls make the job easier for any operator — assure precise bucket control.

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Put a Manitowoc to work in *your* quarry or pit. Smart operators settle for nothing less in peak performance, smooth operation and long working life. Full details and specifications from your Manitowoc distributor. MANITOWOC ENGINEERING CORP., MANITOWOC, WIS.

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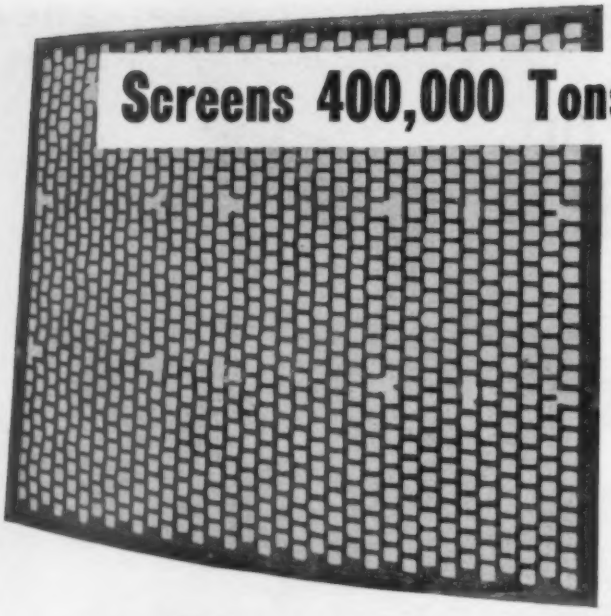
SHOVELS 1-5 YD. Speedcrane CRANES 20-100 TON



Screens 400,000 Tons of Petersburg Granite without a Mishap!

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PROBLEM: One of the Virginia quarries of Sunnyside Granite Co. had trouble screening hard "Petersburg Granite." The granite was so abrasive ordinary screens wore out quickly and had to be replaced.

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RESULT: Over 400,000 tons of Petersburg Granite passed over this one screen before it had to be replaced.

Hendrick Perforated Plate used on vibrating and shaking screens can often mean the difference between profit and loss. To see how you can best benefit from Hendrick's long experience in manufacturing screens for the quarry industry, call your nearby representative today.

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Engineered for

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and Symons® Cone Crushers

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• One of three Symons Cone Crushers used for crushing blast furnace slag at the new Park Hills plant of Cambria Slag Company, Johnstown, Pa. This plant is a division of Standard Slag Company, *one of the world's largest crushed slag producers and users of more than 65 Symons Cone Crushers of various sizes in their vast operations.*

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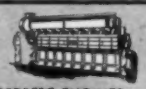

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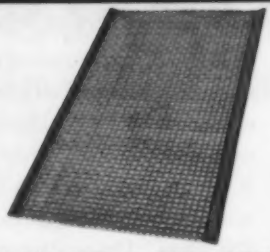

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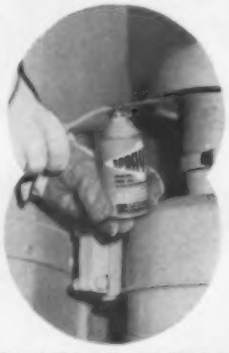

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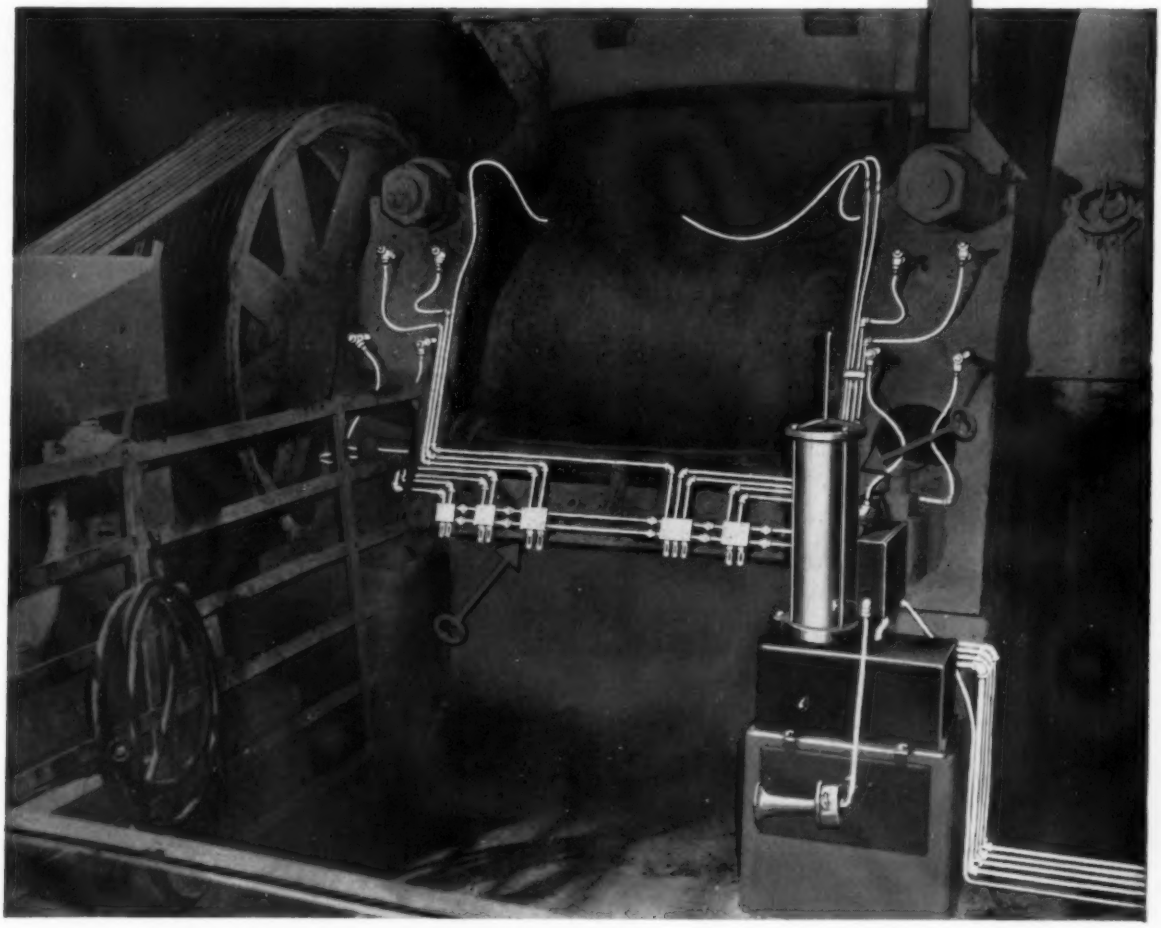

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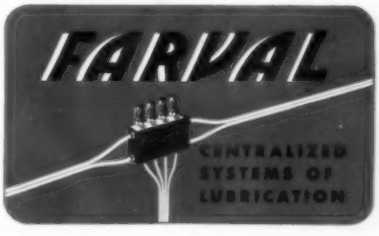
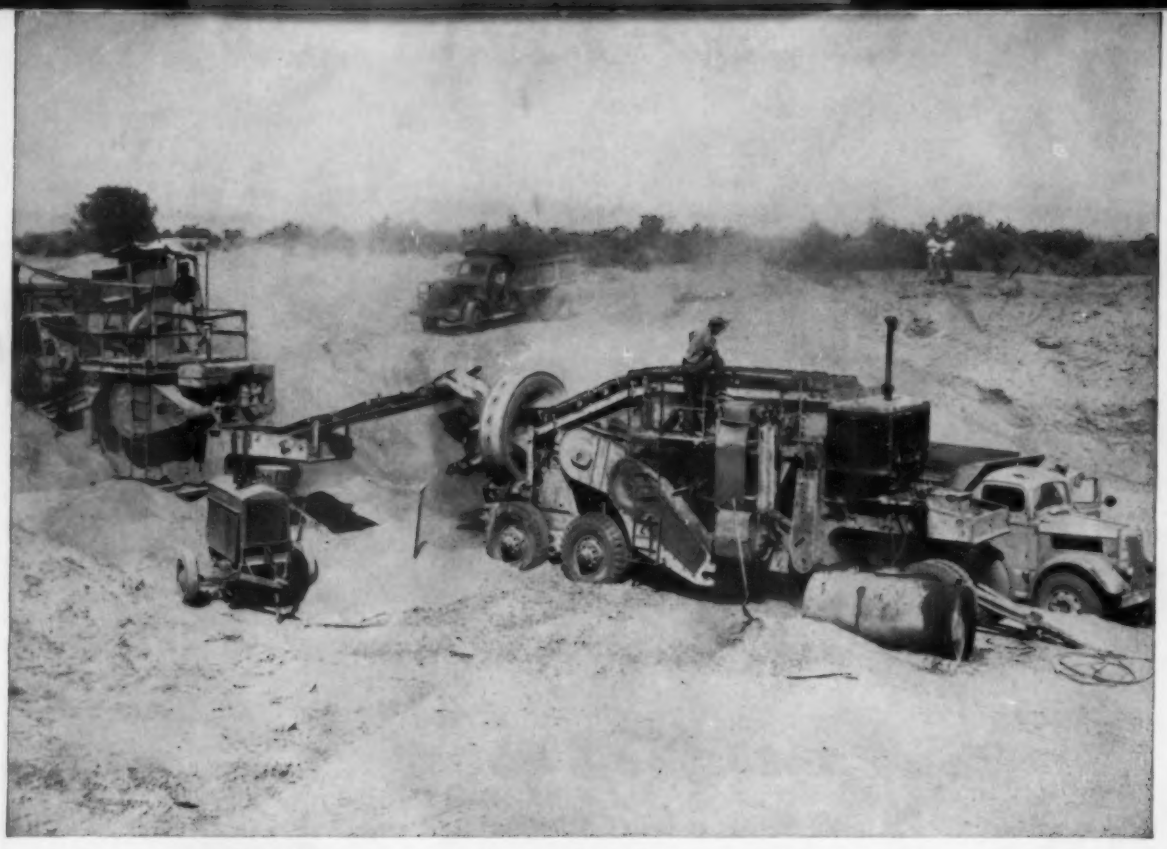
On this crusher in an eastern cement plant, savings in lubricant and labor, due to Farval, run well over $375 a month.





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Texaco Marfak keeps bearings clean, seals out dirt and dust. It won't jar or squeeze out, even under heavy shock loads. And *Texaco Marfak's* tough, moisture-proof film guards against wear and rust. All chassis parts last longer . . . you enjoy high operating efficiency and low maintenance costs.

In wheel bearings use *Texaco Marfak Heavy Duty*. While sealing out dirt and moisture, it seals itself in. That means safer braking and protection that lasts for thousands of extra miles, with no seasonal change required.

If you want *just one lubricant* to handle all chassis, wheel bearing, water pump and other grease lubrication—*Texaco Marfak Heavy Duty Special 2* is the answer. This new, lithium-base member of the famous *Marfak* family pumps easily at low temperatures and lubricates effectively over a wide temperature range. It resists water washing, stands up under the most rugged service.

More than 600 million pounds of Texaco Marfak have been sold.

On crawler mechanisms, use *Texaco Track Roll Lubricant* – noted for its full protection against mud and moisture, its ability to prevent rust and reduce wear.

A Texaco Lubrication Engineer will gladly recommend the proper lubricants to help you increase efficiency and bring down costs throughout your operation. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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